This Issue Exceeds 86,600 Copies

THE JOURNAL

OF THE

American Medical Association

Subscription, $7.00 — PUBLISHED WEEKLY — Single Copies, 25 Cents

VOLUME 104, No. 14 — 535 North Dearborn Street, CHICAGO, ILL. — APRIL 6, 1935

CONTENTS AND SUBJECT INDEX

Early Cancerous Changes in Peptic Ulcer. Arthur L. Bloomfield, M.D., San Francisco.....1197

Carcinoma of the Rectum. J. A. Bargen, M.D., and E. T. Leddy, M.D., Rochester, Minn.....1201

Treatment of Diabetes. H. Rawle Geyelin, M.D., New York....1203

Insulogenic Stimulation of Sexual Development. George A. Williams, M.D., and Robert L. Williams, B.S., Atlanta, Ga.....1208

The Case of Patricia Maguire. E. F. Traut, M.D., Oak Park, Ill...1210

Coronary Artery Thrombosis with Pericardial Effusion. Arthur M. Master, M.D., and Harry L. Jaffe, M.D., New York.....1212

Repair of Bladder Fistulas. Edgar F. Schmitz, M.D., St. Louis...1214

Otosclerosis in Twins. George E. Shambaugh Jr., M.D., Chicago.1216

Streptococcic Infection Simulating Ringworm of the Hands and Feet. J. H. Mitchell, M.D., Chicago.1220
Discussed by Drs. Andrews, Zeisler, Sulzberger, Downing and Mitchell.

CLINICAL NOTES, SUGGESTIONS AND NEW INSTRUMENTS

A Case of Petrositis. Karl W. Gruppe, M.D., Utica, N. Y...1225

Relation of Cystic Duct Obstruction to Deposition of Calcium in the Gallbladder. Elliott C. Cutler, M.D., and Robert Boggs, M.D., Boston 1226

Cancer of the Transverse Colon in a Seven Year Old Boy. Damon B. Pfeiffer, M.D., and J. K. W. Wood, M.D., Willow Grove, Pa.....1227

THERAPEUTICS

The Therapy of the Cook County Hospital. Edited by Bernard Fantus, M.D., Chicago. Therapy of Arterial Thrombosis of the Extremities. Outline by G. W. Scupham, M.D.....1229

GLANDULAR PHYSIOLOGY AND THERAPY

The Growth Hormone of the Anterior Pituitary. Herbert M. Evans, M.D., Berkeley, Calif..1232

COUNCIL ON PHYSICAL THERAPY

Short Wave Diathermy: Preliminary Report. Frank Hammond Krusen, M.D., Philadelphia.....1237

COUNCIL ON PHARMACY AND CHEMISTRY 1239

COMMITTEE ON FOODS 1241

MISCELLANY

Negro Physicians. Julian H. Lewis, M.D., Chicago.....1272

EDITORIALS

Obituaries of Physicians Published in 1934.....1242

California Medical Society Endorses Sickness Insurance.....1243

Prolonged Sleep.....1244

CURRENT COMMENT

Organic Liquids in Tissues.....1245

MEDICAL ECONOMICS 1245

(Subject Index on next page)

ASSOCIATION NEWS 1247

A. M. A. CONVENTION, ATLANTIC CITY, N. J., JUNE 10-14, 1935

Instant response greeted our announcement of the new and greatly improved 1935 series of the

SURGICAL CLINICS of NORTH AMERICA

Since the inauguration of this new series in February our subscription list has jumped 31 per cent—and new subscriptions are coming in with every mail.

These "Surgical Clinics" are now devoted to the surgical diseases and problems of everyday general surgical practice. For instance, in the April Number—just off press—there is a very fine Symposium of 12 Clinics on Surgical Emergencies, recording the experience of practicing specialists at leading hospitals of New York City. The Clinics in this Symposium embrace such frequent surgical conditions as shock, the surgical risk in high blood-pressure, emergency head surgery, rupture of lung abscess, the acute abdomen, burns and 6 other Clinics.

Then, in addition to this fine Symposium, there are 12 other Clinics on everyday common surgical conditions of equal importance; such as knee-joint surgery, operative correction of bow-legs and knock knees, treatment of middle ear disease, acute osteomyelitis, injection treatment of procidentia recti, acute pelvic cellulitis, and 6 others. Turn now to page 3 and read the Complete Contents of the April Number. Note the important material which is offered you by high authorities.

See Complete Contents in SAUNDERS ADVERTISEMENT—Page 3

SUBJECT INDEX TO THIS ISSUE

The letters used to explain in which department the matter indexed appears are as follows: The Star (*) indicates an Original Article; "ab," abstract; "E," Editorial; "C," Correspondence; "Ml," Medicolegal; "ME," Medical Economics.

A. M. A. Annual Congress on Medical Education 1247
Accidents, deaths of physicians due to...E-1242
Acid, aminoacetic; Council report.....1237
Acromegaly, experimental production of..*1234
Adrenal-hypophyseal insufficiency ab-1287
-liver necrosis ab-1276
Advertising, radio, suppress, France.....1257
Allergy, decrease in complement of blood ab-1286
American Society of Clinical Investigation.1253
Anemia, erythroblastic ab-1280
hyperchromic ab-1285
therapy; problems ab-1286
Angina, Henoch's (primary necrotic)...ab-1283
Appendicitis, statistical study.....ab-1285
treatment of peritonitis.....ab-1283
Arsphenamine, encephalitis after.....1267
Arteries, coronary infarcts.....1260
Ascites, diagnostic value; treatment....ab-1281
Association News 1247
Automobile accidents, Paris.....1258

Beer and glycosuria.....1265
Blood sugar (low), encephalitis or tumor..1267
Board Examinations 1268
Bone age studies in myxedema.....ab-1279
Book Notices 1269
Books Received.....Adv. page 36
Brain, abscess, diagnosis; treatment....ab-1282
tumor, encephalitis or hypoglycemia.....1267
visualization of suprasellar tumor....ab-1277
Breast, lactation during mastitis.....ab-1286

Calcium, deposition in gallbladder.....*1226
California Medical Association endorses sickness insurance.....E-1243
Cancer in 7 year old boy.....*1227
specific and nonspecific reactions.....ab-1285
Cecum, localized inflammation.....ab-1284
Cigaret smoking and fetal heart rate....ab-1275
Colitis, allergic factor in.....ab-1283
Colon, cancer in 7 year old boy.....*1227
Committee on Foods.....1241
Congress, U. S., medical bills in....1250; 1254
Congresses, scientific, clearing house for, created 1260
Contracture, Dupuytren's, vocation and trauma in ab-1285
Corporate Practice illegal, Illinois.....1250
Council on Pharmacy and Chemistry.....1239
Council on Physical Therapy.....1237
Cystic formations, treatment.....ab-1283

Death, illness and sickness insurance.ME-1245
of physicians in 1934.....E-1242
Deaths 1262
Diabetes Mellitus, giant infants of mothers with ab-1288
hypophysis irradiation for.....ab-1280
insulin treatment after 10 years.....*1203
relation of endocrines to.....1266
Diathermy, short wave.....*1237
Disability, workmen's compensation acts prolong, England 1255
Dwarfism, experimental production.....*1232

Echinococcosis, echo sign.....ab-1283
Encephalitis after arsphenamine.....1267
tumor or hypoglycemia.....1267
Endocarditis, subacute bacterial, myocardial lesions in ab-1276
Endocrines, relation to diabetes.....1266
Epidemics, news of.....1253
Epididymitis, unspecific chronic.....ab-1288
Epilepsy, neuro-otologic studies.....ab-1280
Esophagus, benign stricture.....ab-1277
Extremities, arterial thrombosis, therapy..*1229

Fertility, effect of vitamin B deficiency..ab-1282
Fetus deformities, diagnosis before labor.ab-1288
heart rate and cigaret smoking.....ab-1275
size in maternal diabetes.....ab-1288
Fever, therapeutic, in hopeless tumor cases ab-1277
Finsterer, Professor, new post.....1261
Fistula, bladder, repair.....*1214
Foot, perspiration 1266
Foreign Letters 1255

Gallbladder, calcium deposit in, relation to cystic duct obstruction.....*1226
Gangrene therapy *1232
Gastro-Intestinal Tract, submucous lipomas ab-1278
Gigantism, production *1233
Glycosuria and beer.....1265
Goiter, Exophthalmic, in children.....ab-1286
Gonads, hormones in relation to reproduction ab-1275
Growth hormone of anterior pituitary....*1232
insulogenic stimulation.....*1208

Hartmann, Henri, honored.....1257
Heart disease and pregnancy.....ab-1275
function tests 1265
muscle lesions in subacute bacterial endocarditis ab-1276
rate (fetal) and cigaret smoking.....ab-1275
Hemoglobinuria, cryptogenetic paroxysmal ab-1287
Hernia, congenital diaphragmatic, in newborn ab-1288
recurrent incisional, treatment.....ab-1278
Hospitals, psychiatric, report, London.....1255
Fourth International Congress.....1254
no compensation for care of ward patient allowed 1252

Industrial poisons, new regulations, Austria 1261
Infection, tachycardia with.....1265
Insulin stimulates sexual development....*1208
Insurance, social, budget, deficit in, France.1256
sickness, California Medical Society endorses E-1243
sickness, death and illness.....ME-1245

Jews, refugees from German persecution, England 1256
Joints, new treatment for distortions.....1261

Kidney excision, hypertrophy of one remaining ab-1279

Labor, diagnosis of fetal deformities before ab-1288
Lactation during mastitis.....ab-1286
Lambliasis, treatment, Lauda's.....ab-1286
Leukemia, monocytic ab-1282
subacute lymphatic ab-1276
Leukocytes in rabbit syphilis.....ab-1277
Licensure, history.....ab-1248
Lipoma, submucous, of intestinal tract..ab-1278
Liquids, organic, in human tissues.....E-1245
Liver-adrenal necrosis ab-1276
atrophy ab-1288
function test, insulin-dextrose-water tolerance ab-1284

Macleod, J. J. R., death.....1254
Maguire, Patricia, case of *1210; E-1244
Malpractice: burns; res ipsa loquitur..Ml-1274
Marriages 1262
Mastoiditis, petrositis complicating.....*1225
Medical Economics 1245
Medical Education, reform, Germany.....1260
larger social aspects.....ab-1248
Medical Examinations and Licensure.....1268
Medicolegal 1274
Meetings, Coming Meetings.....1274
Methane or marsh gas, effects.....1266
Migraine with hyperthyroidism.....1267
Milk, human, antiscorbutic value.....ab-1282
Murders of physicians.....E-1243
Mycosis fungoides, chaulmoogra oil for..ab-1288
Myeloma, problem ab-1284
Myxedema, juvenile, bone age studies..ab-1279

Narcotics, new regulations, Austria.....1261
Negro physicians, number and geographic location *1272
New and Nonofficial Remedies.....1241
News 1249
*di*Nitrophenol, warn against use, Germany.1260
Nobel Prize dinner.....1252

Orthopedic Surgery library.....1256
Otosclerosis in identical twins.....*1216

Peptic Ulcer, cancerous changes in.....*1197
chronic duodenal without stenosis....ab-1281
surgical treatment of gastric and duodenal 1258
Pericardium effusion with coronary thrombosis *1212
Peritonitis, appendiceal, treatment.....ab-1283
draining abdominal cavity in.....ab-1278
Petrositis, surgical drainage; recovery....*1225
Physical Efficiency tests.....1265
Physicians, Negro, number and geographic location *1272
deaths of, in 1934.....E-1242
Physiology, Fifteenth International Congress 1254
Pituitary Body-adrenal insufficiency....ab-1287
growth hormone *1232
irradiation in diabetes mellitus.....ab-1280
Pregnancy, endocrine syndrome.....ab-1287
heart disease in.....ab-1275
lactic acid in blood.....ab-1287
porphyrin elimination ab-1286
urine, origin of follicle stimulating factor.1257
Professions, number of students be restricted? ab-1247
Puerperium, endocrine syndrome.....ab-1287
lactic acid in blood.....ab-1287

Quacks, minimum sentence on, Illinois....1250
Queries and Minor Notes.....1265

Radio advertising, suppress, France.....1257
Radio Program 1249
Rectum, cancer, liver function test in..ab-1284
cancer, poor prognosis.....*1201
Reproduction, hormones in relation to..ab-1275
Ringworm, streptococcus infection.....*1220
Roentgen Rays, prize for essay on.....1254

Sarcoma after thorium dioxide injection...1258
Schellong-Strisower Phenomenon ab-1287
Sex development, insulogenic stimulation.*1208
hormones in relation to reproduction..ab-1275
Short Wave diathermy.....*1237
Siderosis ab-1279
Sleep, case of Patricia Maguire.. *1210; E-1244
Society Proceedings 1274
Splenomegaly, milk injections for.....ab-1281
State Board Examinations.....1268
Sterility, iodized poppy-seed oil injection and air insufflation in.....ab-1276
Sterilization, sexual, of women.....1255
Stomach, benign stricture.....ab-1277
cancerous changes in ulcer.....*1197
Streptococcus infection stimulating ringworm *1220
Students, Medical, Americans in Italian schools 1253
number be restricted?.....E-1247
Suicides of physicians.....E-1243
Suprasellar Region tumors, encephalography visualizes ab-1277
Sweating of feet.....1266
Syphilis, leukocytes in, in rabbits.....ab-1277
spinal fluid from cisternal or lumbar punctures in.....ab-1277
treatment 1266

Tachycardia with infection.....1265
Testicle, bull, estrogenic substance in...ab-1279
Therapeutics of Cook County Hospital....*1229
Thorium Dioxide injection, sarcoma after.1258
Throat, streptococcic sore, outbreak, Michigan 1251
Thrombo-angiitis obliterans, therapy.....*1229
Thrombosis, coronary, with pericardial effusion *1212
Tissues, human, organic liquids in.....E-1245
Tonics and Sedatives.....Adv. page 30
Tonsil, secondary nodule, structure.....ab-1278
Tonsillitis, sepsis after.....ab-1286
Tuberculosis, specific and nonspecific reactions ab-1285
institute, Louisiana 1251
Tumor, effect of artificial fever in hopeless cases ab-1277
Twins, identical, otosclerosis in.....*1216
Typhus, specific and nonspecific reactions.ab-1285

United Medical Service, Inc., illegal.....1250
University instructors, reorganization, Germany 1259
Urine, male, estrogenic substance in....ab-1279
porphyrin elimination in pregnancy...ab-1286
vitamin C in.....ab-1282
Uterus, cancer of fundus, treatment....ab-1277
cervix, strictures 1265
hydatidiform mole, follicle stimulating factor in urine.....1257

Vital Statistics, morbidity, death and sickness insurance ME-1245
Vitamin B deficiency, effect on fertility.ab-1282
C deficiency diagnosis by urinalysis...ab-1282
Vomiting of infants, maternal blood injection in ab-1283

War, World, official German medical report.1260
Workmen's Compensation Acts prolong disability, England 1255

THE JOURNAL of the American Medical Association is published weekly by the American Medical Association, 535 North Dearborn Street, Chicago, Ill. Subscription price, $7.00 a year. 25c a copy. Canadian $8.50. Foreign $11.00. Entered as second class matter June 25, 1885, at the Postoffice at Chicago, Ill., under Act of March 3, 1879

Volume 104. No. 14. *Copyright 1935 by the American Medical Association.*

BOOK BUYING SIMPLIFIED

We supply new and standard medical works of all publishers

ONE ORDER—ONE REMITTANCE
GET OUR LATEST BULLETIN

CHICAGO MEDICAL BOOK CO. 438 S. Honore St. CHICAGO

Medical
Copy

The Journal of the
American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 104, NO. 14 CHICAGO, ILLINOIS APRIL 6, 1935

THE DIAGNOSIS OF EARLY CANCEROUS CHANGES IN PEPTIC ULCER

ARTHUR L. BLOOMFIELD, M.D.
SAN FRANCISCO

The discovery that an apparently benign gastric ulcer is in reality malignant is made often enough to justify the most strenuous efforts to avert such a tragedy. That this feeling is widespread at present is indicated by the abundant literature on the subject. Most of the papers, however, assert or imply that carelessness on the part of the physician is largely responsible and that something useful could be done if he did not stand idly by and allow the patient to drift into the late and hopeless stages of cancer; the thesis is sustained that careful study of people with ulcers which appear to be benign should make it possible to detect early malignant change and to effect a cure by prompt radical operation. It is my purpose in this paper to analyze this position and to see whether in fact it is a sound one.

I will consider first the data that are available for a so-called early diagnosis of carcinomatous gastric ulcer.

1. Roentgen examination. The most extreme suggestion which has been made is that every one over 40 years of age be subjected to half-yearly x-ray studies of the stomach to detect an early lesion. Now even supposing the impossible, that people who feel well or who have minor digestive disturbances could actually be persuaded to follow such a plan, what sane radiologist would have the temerity to advise exploration on the strength of dubious x-ray appearances even if they roused considerable suspicion of trouble in his mind? For example, a man, aged 67, complained of a feeling of being full and uncomfortable after eating. These symptoms had been present for six months. He had lost 30 pounds (13.6 Kg.) and he felt weak. There was gastric anacidity. On x-ray study of the stomach, Dr. Newell reported: "The pyloric zone is definitely increased to somewhat more than twice normal. Yet no ulcerative or nodular irregularity can be made out. I am, however, very apprehensive of an organic lesion at the pylorus." Six weeks later another examination showed no change and the patient has improved steadily over a period of five months. Furthermore, some films taken four years ago were compared with the present ones and the thickened appearance of the pyloric ring was already present then. It seems clear, therefore, that one was not dealing here with cancer, and observations of this sort so commonly turn out to be of no consequence that it would be unwarranted to subject patients to laparotomy on the strength of them.

2. The long and the short history. The statement is made that a long history of indigestion suggests a benign lesion, whereas recent onset of symptoms is more common with malignant disease. There is doubtless some truth in this generalization, but there are so many exceptions that it will hardly serve as a working rule in practice. Especially in connection with the immediate problem of cancerous changes in peptic ulcer does such a rule break down. Many of the ulcer-cancer cases give long histories of indigestion, often with periods of freedom, and who can say when cancer supervened? Furthermore, cancer with a short history, indeed cancer at the very onset of symptoms, is usually advanced from a surgical standpoint. Every one knows that the growth may attain great size before there is any definite departure from health.

3. Age and sex of the patient. Considerations of age and sex are unfortunately of little help in the present problem. It is precisely in cases of gastric ulcer that malignant change is likely to take place at a relatively early age, contrary to the general tendency for cancer to occur in older people. In the present series, which includes fifteen instances of probable or certain ulcer-cancer, three patients were under 35 years of age (26, 29, 33).

4. Size of the ulcer. The interesting measurements of Alvarez and McCarty [1] called attention to the generalization that large ulcers are more likely to be cancerous than small ones. There are, however, so many exceptions both ways that when one is confronted by the individual patient the following of such a dictum is unsafe. The most extreme example in my experience was that of a woman, aged 33, with a long story (over ten years) of indigestion. Roentgenograms revealed an ulcer crater hardly more than 0.5 cm. in diameter, and the gastric acidity was over 100. Here everything pointed to a benign lesion—age, sex, duration, acidity and size of ulcer. Yet within a year she was dead of inoperable cancer, verified by exploration and biopsy. The reverse, that large ulcers may be clinically and histologically benign, must also be admitted.

5. Gastric secretion. The presence of a considerable amount of acid in the gastric secretion has quite rightly been regarded as evidence against primary cancer of the stomach. The relations in ulcer-cancer are less well understood and form the subject of the present inquiry.

In previous publications, Polland and I [2] have presented the evidence for the view that anacidity, so

From the Department of Medicine, Stanford University Medical School.

Since the preparation of this paper, an article has appeared on gastric acidity and cancer of the stomach (Comfort, M. W., and Van Zant, F. R.: Am. J. Surg. **26**: 415 [Dec.] 1934) in which some of the conclusions reached by the author have been anticipated.

1. Alvarez, W. C., and McCarty, W. C.: Sizes of Resected Gastric Ulcers and Gastric Carcinomas, J. A. M. A. **91**: 266 (July 28) 1928.
2. Polland, W. S., and Bloomfield, A. L.: Gastric Secretion in Cancer of the Stomach, Bull. Johns Hopkins Hosp. **46**: 307 (May) 1930. Bloomfield, A. L., and Polland, W. S.: Gastric Anacidity, New York, Macmillan Company, 1933.

common in cases of cancer of the stomach, is associated with a chronic gastritis antecedent to the growth and that it is not the result, as a rule, of destruction of the mucous membrane by cancer. In brief, cancer tends to develop in stomachs already the seat of chronic gastritis with anacidity. There are, however, in any series of cases a certain number with normal or at least only slightly impaired gastric secretion; these it is difficult to reconcile with the thesis outlined and with them the present study is concerned.

TABLE 1.—*Gastric Secretion in Ninety-Two Consecutive Cases of Cancer of the Stomach*

	Total	Per Cent
Total cases	92	
With anacidity	70	76
With free hydrochloric acid	22	24
Total males	72	
With anacidity	59	82
With free hydrochloric acid	13	18
Total females	20	
With anacidity	11	55
With free hydrochloric acid	9	45

In going over our records of the past few years it was possible to collect a consecutive series of ninety-two cases of cancer of the stomach in which standard histamine tests of gastric secretion had been done. The main statistical facts are shown in table 1.

The chart shows the distribution of the total acidity values of the twenty-two patients who secreted free hydrochloric acid as tested by Töpfer's reagent. While the number of cases is not sufficient to be conclusive, it is of interest that they are not grouped at the anacidity end of the scale, as one might expect, but that they cover the entire range of normal secretion. In fact, while there were only six cases with a total acid under 60, there were fifteen with acid of 60 or more. Such a tendency to a bimodal distribution curve suggests that one is dealing with two different classes of material; the obvious conclusion is that the cancers with acid may have a different origin from those arising on a basis of gastritis with anacidity.

It has been suggested that acid gastric secretion in the presence of cancer indicates that the growth has arisen on the basis of peptic ulcer. Our twenty-two cases of cancer with acid were carefully analyzed, therefore, to see what evidence existed that such was the case, the conclusions being based on history, roentgen examinations and above all on autopsy or operative material. The data are summarized in table 2.

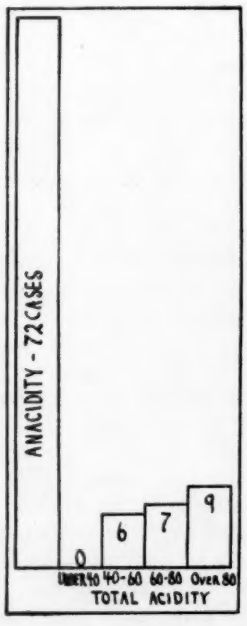
In nine of the twenty-two cases (table 4) it could definitely be said that benign ulcer preceded the cancer, and in six more this was highly probable. In five cases no conclusion could be reached and in only two was it certain that no ulcer had existed. There is strong evidence, therefore, that in most of this group of cases with preservation of gastric secretion peptic ulcer was the initial event. As a control, a series of twenty-two consecutive cases of cancer with anacidity were analyzed in the same way (table 3) and here the results were quite different. In not a single case was there proof of preceding ulcer and in all but four it was certain or probable that the cancer was not on a basis of ulcer. The entire situation is summarized in table 4.

The observations support the view that there are two types of cancer of the stomach, which differ in their pathogenesis: (1) cancer arising in stomachs the seat of chronic gastritis with anacidity and (2) cancer arising in peptic ulcer. The former is the usual variety; it comprises from two thirds to three fourths of the cases. Our statistics are also of some practical value, since they indicate that the presence of acid is the crucial factor in the diagnosis of cancer ex ulcere.

Finally there is the question as to whether a cancerous ulcer may really be malignant from the start—an ulcerated cancer. Everything seems against such a view: the fact that early cancers have been demonstrated histologically on the edge of a typical peptic ulcer and that in the anacidity group nothing suggestive of the craters of peptic ulcers is to be demonstrated. Indeed, the occurrence of cancer in a perfectly normal gastric mucosa must be an extremely rare event if it occurs at all.

In summary then, evidence is presented that there are two types of cancer of the stomach of fundamentally different origin and that they may be differentiated with considerable certainty by the presence or absence of free acid in the gastric secretion. While this general idea is not a new one, the clearness of the concept has been obscured by the old erroneous view that cancer, whether or not associated with ulcer, begins in a stomach which has a normal secretion and that in either case the secretion fails as the growth proceeds. On the contrary, one variety of cancer arises in the stomach already the seat of gastritis and anacidity and the other, arising on the basis of ulcer, leads rarely if ever to any material change in the character of gastric secretion.

Finally it must be emphasized that here again studies of gastric secretion fail to help in the practical problem of deciding when a benign ulcer becomes cancerous, since the acid persists unchanged or but little diminished. One cannot expect to find anacidity in these cases.



Distribution of cases of cancer with acid according to degree of total acidity.

6. Symptomatic response to therapy. It is said that failure of ulcer symptoms to respond to therapy should rouse suspicions of malignancy. Such a rule is, however, of little practical value. In the present series of cancerous ulcers, for example, there was symptomatic relief in five cases for periods of from five to eight months before rapid decline set in. Conversely, it is common experience to observe patients with benign ulcer so refractory to medical therapy that eventually operation is done for this reason only.

The same may be said of decrease in size of the ulcer under medical therapy. Many benign ulcers fail to show any change in size by roentgen examination over long periods of time and in two of our malignant cases the ulcer seemed smaller at the very time when cancer was extending through the walls of the stomach. Technical difficulties such as lack of filling of the crater with the radiopaque mixture contribute to such errors.

In summary, then, none of the criteria that have been proposed for the detection of early malignant change in peptic ulcer are reliable in the individual case, which is the practitioner's concern. The fact, statistically valid, that among ulcers large ones are more likely to be

malignant than small ones cannot be depended on to give the correct answer in the individual patient, and the same difficulty holds when one considers the type of history, response to therapy, age, sex, and the character of the gastric secretion. One is forced to the conclusion that it is impossible even after most careful study and observation to be sure whether early cancerous changes have taken place in an apparently benign peptic ulcer.

If, then, it should be admitted that such changes cannot be detected clinically with any useful degree of certainty; if, in brief, it is impossible to differentiate between benign and malignant ulcer until late and obvious evidences of cancer are present, then the point at issue is whether or not all gastric ulcers should be resected as soon as recognized as a prophylactic against subsequent cancer. Now if partial gastric resection, which is indicated if anything at all is done, were a trivial procedure no one would question the propriety of a prophylactic operation just as no one hesitates to have a pigmented mole removed to avoid possible melanosarcoma. Unfortunately the operation is a serious one with considerable immediate mortality, so that the situation will not be bettered unless the hazard of cancerous changes in ulcer is greater than the risk of operation. It is necessary, therefore, to examine the statistics in regard to these matters.

TABLE 2.—*Analysis of Twenty-Two Cases of Cancer of the Stomach with Acid with Reference to Antecedent Peptic Ulcer*

Name	Sex	Age	Acid		History	Roentgen Examination	Course	Evidence Favors Ulcer
			Free	Total				
Ma.	♀	57	18	40	Indigestion 15 years; worse past 2 months	Large ulcer high on lesser curvature	Died 1 year later; autopsy report (done elsewhere), carcinoma of stomach	Yes
Ed.	♂	49	26	40	Occasional indigestion for years; for 6 months epigastric distress 1-2 hours p. c.; relieved by food or soda	Appearance suggests large tumor encircling antrum; no crater	Rapid decline; operation: inoperable cancer of stomach with metastases	?
Ar.	♂	40	20	44	Stomach trouble 20 years	Irregular defect on greater curvature near pylorus; no crater	Rapid decline; operation: inoperable cancer of stomach with metastases	?
Ho.	♂	53	36	50	Stomach symptoms only two months	Pyloric obstruction	Subtotal gastric resection; infiltrating cancer; no ulcer	No
Ro.	♀	64	36	52	Periodic gastric distress for many years; worse recently	Constant niche on lesser curvature, which has appearance of ulcer	Felt well on medical therapy for 6 months; then rapid failure, mass in epigastrium and metastases; x-rays now show large irregular ulcer crater	Yes
Beesu.	♂	46	44	56	Stomach symptoms 3 years	Large ragged annular filling defect in antral region	Died 6 months later with metastases	?
Frey.	♂	55	50	60	Epigastric pain for 2 years off and on	Large ulcer crater high on lesser curvature	Exploration in deep ulcer crater in indurated mass high on lesser curvature; gastro-enterostomy; 3 year later, x-rays show lesion more extensive; patient very anemic and ill	Yes
McC.	♀	46	48	60	Indigestion 2½ years	Ulcer crater on lesser curvature	Excision of ulcer 1 cm. wide and 1 cm. deep; at one edge a few irregular glands with cells invading stroma; died 2 years later; autopsy: recurrent carcinoma of stomach	Yes
Bo.	♂	36	54	66	Stomach symptoms 4 months	Large ulcer (3.5 cm.) high on lesser curvature	Three months later no healing of ulcer; general condition rapidly worse	Yes
Fl.	♂	40	55	68	Stomach symptoms off and on for 8 years; worse past few months	Widening of pyloric interspace; no crater	Pyloroplasty; histologically cancer of pylorus (submucous); no ulcer; died of recurrence	No
Mu.	♀	48	50	76	Stomach symptoms 9 months	Large gastric ulcer (examination made elsewhere)	Improved 5 months on medical treatment, then rapidly worse; operation: extensive infiltrating lesion of lesser curvature with metastases; inoperable	Yes
Li.	♀	57	53	76	Stomach symptoms intermittently for 4 years; worse past 4 months	Huge defect on lesser curvature	Gastric resection; huge ulcerated lesion (cancer); impossible to tell how it started	?
Vi.	♀	26	70	78	Symptoms started 2 years ago; exploration then: large ulcer (not excised) seen high on lesser curvature	Crater 4 cm. in diameter on lesser curvature	Improved on medical therapy for 5 months; rapid failure then; exploration: inoperable cancer	Yes
Sa.	♂	58	46	84	Indigestion 2 years; worse past few months	Large filling defect involving antrum	Resection of stomach with removal of growth; specimen shows ulcer crater 2 by 4 cm.; carcinoma was rising in base of ulcer and spreading through stomach wall	Yes
Co.	♂	50	74	89	General failure for a year; no definite gastric symptoms	Slight irregularity on lesser curvature	Autopsy: on lesser curvature 9 cm. from pylorus a shallow ulcer 2 by 4 cm.; one edge of this shows definite cancer histologically	Yes
Ur.	♂	55	72	90	Indigestion 4 years; much worse 3 weeks	Small ulcer crater near pylorus with obstruction	Subtotal gastrectomy: ulcer 1.5 by 4 cm.; histologically cancer	Yes
De.	♂	54	92	106	Epigastric pains 4 months	Ragged annular filling defect at pylorus with partial obstruction	Pyloric resection: advanced ulcerated cancer; impossible to tell about early stages	?
Ed.	♂	58	90	108	Indigestion 4 months	Ulcer crater 2 cm. in diameter on lesser curvature	Rapid failure; metastases in lymph nodes and liver	Yes
Be.	♀	29	98	110	Indigestion 2 years	Ulcer on lesser curvature near pylorus 1 cm. in diameter	Temporary relief by medical therapy; 4 months later increase of symptoms; x-rays showed ulcer larger; operation: cancer	Yes
Sr.	♂	55	98	112	Stomach symptoms 8 months	Annular defect near pylorus with partial obstruction	Exploration: annular cancer; no ulcer made out	?
Ma.	♀	52	106	114	Indigestion for 16 years; relieved by alkali	Ulcer crater 1.5 cm. in diameter on lesser curvature; 1 month later crater smaller	Complete relief on medical therapy for 5 months; then mild obstructive symptoms; operation: indurated area on lesser curvature with ulcer in center; gastro-enterostomy only done; died 1 year later; autopsy: cancer of stomach	Yes
F.	♀	33	110	120	Indigestion 4 months; previous periods of distress	Ulcer crater near lesser curvature 0.5 cm. in diameter	Response to medical therapy for 3 months; size of ulcer by x-rays unchanged; then rapid failure; exploration: inoperable cancer (biopsy)	Yes

First, as to the hazard of a benign ulcer becoming cancerous: The general feeling in the literature is that probably not more than 5 per cent of apparently benign peptic ulcers are in fact malignant; this is in accord with our own experience. Dr. Chang has recently studied the cases from this clinic. A consecutive series was collected in which the roentgen examination showed craters typical of simple gastric ulcer without other change. It was assumed that if after a follow up period of two years the patient was well the ulcer was benign

sistent indigestion, and with the social and psychologic hazard that must be met when a serious operation is advised. Finally, operation does not necessarily save the patient from cancer, even if only the earliest malignant changes are present. This is well shown by the Mayo series [1] of resections for early cancer or cancerous ulcer. Among sixty-eight such cases in which malignancy could be demonstrated only by the microscope there were thirty-six deaths, or 52.7 per cent, presumably of recurrences.

TABLE 3.—*Analysis of Twenty-Two Cases of Cancer of the Stomach with Anacidity, with Reference to Antecedent Peptic Ulcer*

Number	Sex	Age	History	Roentgen Examination	Course	Evidence Favors Ulcer
1	♂	73	Indigestion 5 months	Large filling defect at cardia	Metastases to liver and elsewhere	No
2	♂	54	Stomach symptoms 6 months	Ragged irregularity at cardia	.....	No
3	♀	73	Vague failure of health 6-8 months	Deformity of entire lower half of stomach; no crater	Patient almost moribund	No
4	♀	53	Vomiting one week	Whole antral portion cut off leaving only irregular funnel-shaped lumen with almost complete obstruction	.....	No
5	♂	61	General failure 8 months; no gastric symptoms	Distal two thirds of stomach completely obliterated by a ragged lesion	Autopsy: large cancer of lesser curvature of stomach in distal third; no sign of ulcer	No
6	♂	57	Stomach trouble for years; worse past 4 months	Huge irregular filling defect at antrum; no crater	Resection of lesion; advanced sloughing growth	No
7	♂	40	General failure 7 months; no stomach symptoms	Huge ragged lesion of antrum with palpable epigastric mass	Patient moribund	No
8	♂	54	Vomiting 2½ months	Huge irregular defect on greater curvature	Metastases in liver	No
9	♀	26	Indigestion, onset 3 years ago	Irregular filling defect at antrum involving both greater and lesser curvatures	Operation: a hard nodular mass extending from pylorus for 8 cm.; biopsy showed cancer	?
10	♂	54	Epigastric pains 3 weeks	Large filling defect in mid portion of stomach	Exploration: hard nodular mass near cardia; metastases to liver	No
11	♂	72	Epigastric distress 8 weeks	Irregular filling defect of greater curvature in its middle third	Autopsy: entire stomach except 10 cm. at cardia thickly infiltrated with tumor; no localized ulcer	No
12	♂	40	Heavy feeling in stomach for 3 weeks	First x-ray of stomach did not show disease; 5 months later tubular defect in body of stomach, ragged on greater curvature side	.....	No
13	♀	36	Abdominal distress 2 months	Large ragged defect near cardia, on greater curvature; no crater	Rapid downhill course	No
14	♂	37	Epigastric distress 3 months	Pyloric obstruction	Operation: resection of pyloric cancer; no ulceration	No
15	♀	50	Digestive symptoms 2 months	Irregular filling defect of entire pyloric antrum; no crater	Operation: unresectable cancer near pylorus with metastases; no signs of ulcer	No
16	♂	60	Epigastric pain 6 months	Irregular filling defect of antrum mainly on greater curvature; no crater seen	Biopsy of skin nodule: adenocarcinoma	No
17	♂	76	General failure and loss of appetite for 3 months	Large filling defect at cardia	Multiple metastases	No
18	♂	47	Indigestion 4 years; abdominal pain 6 weeks	Constant defect in antral region	Operation: resection of pyloric cancer; huge shallow superficial ulceration of mass, which shows cancer everywhere	?
19	♂	54	Epigastric pain 3 months	Large filling defect at antrum	Operation: resection of pyloric cancer; no ulcer	No
20	♂	53	Vomiting for a year	Ragged defect at antrum with partial obstruction; no crater	Metastases	No
21	♀	51	Epigastric distress and vomiting 4 weeks	Sawed off pylorus	Operation: huge cancer at pylorus (biopsy)	?
22	♀	60	General failure 5 months; no special stomach symptoms	Huge irregular defect involving half the stomach	Operation: huge cancer; biopsy; inoperable	?

at the time of the first examination. Sixty-two cases were studied in this way. Two of the patients, or 3.2 per cent, turned out definitely to have cancer, and in a third case there was serious suspicion of cancer without verification. At most, then, three, or 4.8 per cent, of the series of apparently benign ulcers were, or soon became, cancerous. These figures do not tell of course how many ulcers would have become cancerous if observed over a longer period—say ten or twenty years—and from this standpoint the figure of 5 per cent would doubtless have to be increased to some extent. Gastric resection, however, involves an operative mortality of at least 10 per cent even in skilled hands [3] and this figure could safely be doubled if one includes operations done by surgeons in general. In addition, even if resection is accomplished, one still has to reckon with possible recurrence of ulcer, with postoperative complications such as adhesions, obstructions and per-

3. Rienhoff, W. F., and Baker, B. M., Jr.: The Medical and Surgical Aspects of Peptic Ulcer, Internat. Clin. **2**: 167 (June) 1934.

SUMMARY

One arrives therefore at certain definite conclusions: First, it is impossible by clinical observation to determine early cancerous changes in apparently benign peptic ulcer. The various criteria, while statistically valid, are subject to so much variation that they cannot be depended on in the individual case even though great

TABLE 4.—*Evidence of Antecedent Gastric Ulcer in Cases of Cancer of Stomach with Anacidity and with Preservation of Gastric Secretion*

	Cancer with Acid, per Cent		Cancer with Anacidity, per Cent	
Antecedent ulcer	68	Definite 41, Probable 27	0	
No antecedent ulcer	9		81.5	Definite 45.5, Probable 36
Relation to ulcer uncertain	23		18.5	

size of the lesion points strongly to cancer. Hence, if prophylactic surgery is to be used, one should consider every gastric ulcer as malignant *in posse* if not *in esse* and one should excise them all. But the surgical risks of such wholesale gastric resection are distinctly greater than the hazard of ulcer being or becoming malignant.

The only practical attitude to adopt, therefore, is to regard small apparently innocent gastric ulcers as in fact benign until evidence to the contrary is weighty enough to arouse serious suspicions, and to accept the fact that a certain number of unavoidable tragedies will occur. They will occur in the future as they have in the past, not necessarily because physicians are careless but because they are helpless in the face of an insoluble problem of diagnosis.

CARCINOMA OF THE RECTUM

SOME CAUSES FOR THE POOR PROGNOSIS

J. ARNOLD BARGEN, M.D.
AND
EUGENE T. LEDDY, M.D.
ROCHESTER, MINN.

Carcinoma of the rectum is a very serious disease; although it may be uncommon in the experience of any individual physician, its early recognition is essential to the life of the patient. Many patients who have carcinoma of the rectum appear at the Mayo Clinic and elsewhere for examination when the local lesion is hopelessly inoperable. This also implies that many of these lesions are beyond even palliative irradiation when first seen. Rankin, in a review of 1,727 cases of malignant disease of the rectum that were observed at the clinic, discovered that only 55 per cent of the lesions were operable and that resection was possible in only 35 per cent. This indicates obviously that in any group of rectal carcinomas the expectancy of life for the patient is short. When it is recalled that carcinoma of the rectum causes definite and annoying symptoms, such as rectal bleeding, pain, constipation and diarrhea, which get progressively worse, and that about 95 per cent of all these lesions are within reach of the examining finger, these facts are disheartening.

We realize that carcinomas of the rectum are not alone in not being treated at their most favorable stage. However, after following many patients who have had carcinoma of the rectum, from the time of their admission to the clinic until they were entirely relieved of their trouble or until their demise, we have come to be of the opinion that postponement of care and procrastination are more prevalent among these patients than they are among those who have most other types of carcinoma. The questions that obviously arise are: Why should this be so? Are the methods of diagnosing carcinoma of the rectum at fault? Are physicians more likely to be indifferent to lesions in this part of the body than to lesions in other parts? Does the ubiquitous advertising of cures for piles and constipation hinder the early diagnosis of carcinoma of the rectum because the patient treats himself?

Our observation of so many advanced cases of this disease prompted us to make a review of the causes of late diagnosis. Each of us interviewed 100 patients who had carcinoma of the rectum, as they came under our personal observation. One of us (J. A. B.) questioned those who were admitted to the intestinal service for preoperative preparation. These were patients who were to be subjected to radical operation or who were about to undergo colostomy for relief of obstruction that was the result of an advanced lesion. The latter patients were placed in the hospital for temporary comfort. The other of us (E. T. L.) questioned 100 patients who were sent for palliative irradiation or who were thought suitable for primary therapeutic irradiation. Both of us followed the same outline for questioning. In addition to the usual points that are covered in an intestinal history, the following list of questions was asked every patient, and the answers were verified when necessary by an interview with a relative of the patient:

What were the first symptoms which you noted?
What was the progress of the disease?
What did you think was wrong with you?
Did you attempt to treat yourself?
How long had the symptoms been present before you consulted a physician? If there was a delay, why?
What kind of an examination did the physician make and what treatment did he prescribe?

Ninety-two of the 200 patients had consulted a physician within a month from the onset of symptoms. The other 108 had not consulted a physician until from two to twenty-four months after the onset of their trouble and until their own treatment had failed. Granting that a tumor must progress to a certain stage before it can produce symptoms, it seems obvious that in these 108 cases the malignant condition must have progressed to a less favorable stage during the time these patients were treating themselves. It was among this group of patients that adequate treatment usually could not be employed because of the advanced condition of the disease. Only two patients, both of whom had severe symptoms, came directly to the clinic before they had consulted any physician.

The American Society for the Control of Cancer, and most authors who have written on the subject, regard one month as an average amount of time during which a patient may have symptoms before a correct diagnosis is made and treatment instituted. We also believe that a correct diagnosis should be made within one month after the symptoms are present. It might be said in passing that we do not regard the specific mention of carcinoma as indicating correct diagnosis, because indirect but equally reliable information about the diagnosis can be obtained from what the physician told the relatives of the patient and from the treatment. As there are but two methods of treatment that are accepted generally, irradiation and operation, we have regarded the use of any medical treatment as an indication of wrong diagnosis, provided we could exclude deliberate experimentation on the part of the physician, or quackery.

In this group of 200 cases, the earliest symptom was bleeding; pain occurred next, then constipation and, finally, diarrhea. Most patients complained of combinations of these and said that their symptoms had been getting worse; yet these symptoms, as annoying as they were, did not bring these patients to their physicians early. Self medication had been the rule among these patients; this had included the regulation of diet, the notorious remedies for constipation, and the equally famous "pile cures." In this connection it is necessary to refer only to the remedies for regulation of the

From the Division of Medicine (Dr. Bargen) and the Section on Therapeutic Radiology (Dr. Leddy) the Mayo Clinic.

bowels, which are advertised by radio, on billboards, in newspapers and in magazines. It seems too bad that the excellent work being carried out by the American Society for the Control of Cancer should be minimized by advertising to a gullible public, and that patients should treat themselves without consulting a physician.

We tried to discover, by questioning the patient, why the first physician who had been consulted had failed to make a rectal examination in so many instances, and learned that there had been several reasons for this. Often the patient had objected to such an examination, and the physician, in an attempt to make the best of an unsatisfactory situation, had prescribed a palliative and had requested the patient to return shortly, or else the physician had hesitated to add to the pain of an extremely uncomfortable individual by making a rectal examination and had therefore prescribed palliative medication. It was disclosed that there were three reasons for the failure of these patients to return to their physicians as instructed: first, they had obtained relief and had decided that it was unnecessary to return; second, they had discussed their symptoms with friends and had tried the remedies that their friends had recommended; or, third, they had feared that they might have carcinoma and because of the relief that had resulted from medication they had decided that they did not have carcinoma but that they had only the symptoms of it. Meanwhile the carcinoma had progressed in silence. The time invariably had come when the patients had had intolerable symptoms and when the remedy no longer had given relief. At this time they had returned to their physicians or had consulted others, who had had little trouble in recognizing the underlying cause of the symptoms. Valuable time had been lost in this period by the treatment, which had masked the symptoms of carcinoma. Too often the condition had been diagnosed wrongly as "hemorrhoids" or "colitis" without a proctoscopic or roentgenologic investigation, and hemorrhoidectomy or other palliative measures had reduced the chances of much greater benefit from correct radical treatment.

Another reason for delay in starting correct treatment had been the fact that both patient and physician often had felt that the operation for carcinoma of the rectum was too formidable. It should be remembered, however, that advances have been made in the management of these cases in recent years which have helped to make surgical treatment of carcinoma of the rectum very satisfactory. In the hands of expert and experienced operators who have their patients prepared by improved methods of preoperative treatment, radical operation entails a mortality of less than 5 per cent. The preoperative vaccination against peritonitis, the thorough emptying of the colon, the replenishing of a depleted water balance, the forced storage of carbohydrates, and the isolating of patients who have disorders of the colon as a unit under combined medical and surgical care are measures that have tended to increase the safety of rectal surgery. Surgical opinion throughout the world is unanimous that the earlier the patient comes for treatment the greater is the likelihood of cure by operation, whereas the later the diagnosis is established the less is the chance of cure by any treatment.

When patients finally have had the diagnosis of carcinoma of the rectum established, much tact in the discussion of the necessary treatment is indicated. Patients do not like to have a colonic stoma if it can be avoided, and this can be done in certain favorable cases by employing radiotherapy or segmental resection. Hence the fear that a patient has of the inconvenience of a colonic stoma may be groundless. Then, too, a colonic stoma, if suitably made, offers little inconvenience if the patient has been educated to care for it properly. W. J. Mayo has aptly illustrated an unsatisfactory colostomy by the story of the man who pulled the wheelbarrow of refuse. He did not push it because he hated the sight of it. But, as we have said, colonic stomas will cause little trouble if patients are given detailed instructions about their care. We have seen many patients who had refused to submit to colostomy and resection when these operations first had been recommended by their physicians and who later had consented to undergo the same operations on the advice of another physician, who had allayed completely their fears of the undesirability of such procedures.

Finally, in the minds of many there still seems to lurk the dread and hopelessness in regard to neoplasms of the rectum. This idea must be carefully expelled and the mind of the sufferer must be disabused. We never have found it difficult to convince a patient who had such a lesion that our present method of treatment was essential and satisfactory. It is fortunate that some carcinomas of the large intestine are notoriously slow in their growth and generally have a favorable prognosis. The exact status of a given lesion can be determined only by operation. These facts do not detract from the importance of an early diagnosis, for the nearer a carcinoma approaches operability the better is the chance of permanent cure by whatever method is indicated, radical extirpation or radiotherapy. It should be remembered that, in cases in which the patients are seen early and are carefully selected, radiotherapy without operation is a safe and dependable method of treatment.

This group of 200 cases demonstrates that inoperable carcinomas of the rectum occur largely because patients treat their own disease under the impression that their symptoms are common to most people and are not serious. Both patient and physician make a great mistake in gambling that a lesion is benign. It must be remembered that symptoms of carcinoma of the rectum simulate those of other benign lesions and even those of functional conditions. The importance of early correct diagnosis cannot be overemphasized from the prognostic point of view. Temporization and mismanagement cannot be too strongly condemned, for they will place many patients beyond all hope of cure and relegate them to palliation and hopelessness. If doubt exists about any given lesion or group of symptoms, the lesion should be considered carcinoma until it is proved otherwise by competent examination. The fallacy that rectal symptoms should be considered and treated as functional upsets is perpetuated unfortunately by the exploiters of nostrums, and the physician is forced to compete with those who offer free medical advice for pecuniary reasons only. The patient, who lacks discriminating sense, therefore treats his symptoms but not the underlying lesion until he becomes convinced, by his own failure to relieve himself, that medical advice is highly desirable. The patient who has rectal (or other) carcinoma and who by his own ignorance and neglect experiences the normal fatal outcome has a gloomy outlook to face. As he nears the end of his torture and learns that he might have been cured by relatively simple measures, and that he has been deluded by false hopes through the treacherous

theories of dishonest prophets until his case is hopeless and his family is penniless, his lot is indeed pathetic. As carcinoma of the rectum can nearly always be diagnosed with the index finger, it is lamentable that so many patients who are afflicted with this condition do not consult a physician until it is too late to secure the greatest benefit.

CONCLUSIONS

A careful analysis of the answers obtained from 200 patients has led us to conclude that the poor prognosis of carcinoma of the rectum is the result of the following causes:

1. The frequent wasting of valuable time on the part of patients by self diagnosis and self treatment, and by regarding the symptoms as unimportant.
2. Delay by the physician to make a digital examination of the rectum.
3. Lack of knowledge, on the part of the patient, concerning the safety and satisfactory end results of rectal surgery.

THE TREATMENT OF DIABETES WITH INSULIN (AFTER TEN YEARS)

CONTRASTING THE EFFECTS OF NORMAL AND OF THE OLDER DIABETIC DIETS

H. RAWLE GEYELIN, M.D.
NEW YORK

During October 1923 I first attempted the administration of high carbohydrate diets to diabetic patients treated with insulin. Most of the diets employed at that time were not as high in their carbohydrate content, however, as the diets that I have used during the past nine years. A preliminary report of my earlier observations with the high carbohydrate or normal type of diet was made before the Section on Pediatrics of the Medical Society of the State of Pennsylvania in October 1925.[1] In January 1926 Sansum [2] reported the use of somewhat similar diets in a group of insulin treated diabetic patients. Adlersberg and Porges [3] in 1927 also advocated high carbohydrate—"fat poor diets" for the treatment of diabetic patients receiving insulin. At that time it was agreed by all the investigators mentioned that these high carbohydrate diets increased the relative effectiveness of insulin in a majority of the cases studied. Many other clinicians, both in this country and in Europe, have subsequently adopted this method of treating diabetes, reporting similar satisfactory results.

Adlersberg and Porges,[3] Rabinowitch,[4] and I [1] have all called attention to the importance of maintaining a low fat content in these diets. The increased effectiveness of insulin that so commonly follows the substitution of the high carbohydrate-low fat regimen for the low carbohydrate-high fat regimen seems to be chiefly dependent on the degree to which fat is curtailed.

The amount of carbohydrate and its relation to the protein, fat and total calories in the various diets used by different observers in the past eight years has varied considerably. As a rule, however, the objective of most clinicians employing these high carbohydrate diets has been to make them approximately equal to the diets of normal people of similar age, sex, weight and physical activity.

The reasoning that originally led me to experiment with and eventually adopt the higher carbohydrate diet was as follows: Conceding that diabetes was due to an insulin deficiency and that the failure to metabolize food without glycosuria was directly proportional to this deficiency, the artificial administration of insulin in amounts sufficient to restore the total available body insulin to normal should result in the ability of that individual to metabolize a normal diet ("normal" both as to quantity and quality of food).

It is axiomatic that the facts concerning any new therapeutic procedure can be determined only when the application of such procedure has been tested in many cases over a period of years. I have therefore chosen this occasion, ten years after diets high in carbohydrate were first administered, to summarize briefly the results of treatment as I have observed them in a group of 150 cases of diabetes treated with insulin and a high carbohydrate diet during the past ten years. Of this group, twenty-eight have been under observation for from eight to ten years, seventy-eight have been under observation for from five to eight years, and the remainder, or forty-four, have been under continuous observation for from one to five years. This group of 150 patients is only a fraction of the total number of more than 900 cases of diabetes treated with insulin during the past twelve years. The basis of selecting this group of 150 insulin treated patients has been:

1. Length and continuity of treatment.
2. Reliability and completeness of their records.
3. Relative freedom from complicating conditions.
4. Extensiveness of laboratory data.

Limitation of space prevents the presentation of complete protocols of the entire group. I have therefore selected the records of ten patients for tabulation, because this group is representative of the variation of the results obtained in the larger group. The group of ten has been further subdivided into two groups of five patients each. In the first group, patients 1, 2, 3, 4 and 5, are included those who have been continuously under my care for from eight to fifteen years. Patients 1, 2, 3 and 4 started insulin treatment from ten to eleven years ago. The second group, comprising patients 6, 7, 8, 9 and 10, had all been under the care of other clinicians for periods ranging from one to nine years. They had all received the lower carbohydrate-higher fat types of diet and had been treated with insulin for at least a year previous to coming under my care. In this respect they serve as a control group.[4a]

It is necessary at this point to explain the method I have used in compiling the tables and charts from the data in the records. In each of the fifteen tables, the total number of units of insulin, the total grams of

---

Read before the Section on Miscellaneous Topics, Session on Nutrition, at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the author's reprints. A copy of the latter will be sent by the author on receipt of a stamped addressed envelop.

1. Geyelin, H. R.: Recent Studies on Diabetes in Children, Atlantic M. J. **29**: 829 (Sept.) 1926.
2. Sansum, W. D.; Blatherwick, N. R., and Bowden, Ruth: The Use of High Carbohydrate Diets in the Treatment of Diabetes Mellitus, J. A. M. A. **86**: 178 (Jan. 16) 1926.
3. Adlersberg, D., and Porges, O.: Zur Theorie und Praxis der kurativen Diabetesbehandlung, Klin. Wchnschr. **5**: 1451 (Aug. 6), 1508 (Aug. 13) 1926; Weitere Erfahrungen über die Behandlung des Diabetes mellitus mit fettarmer Diät, ibid. **6**: 2371 (Dec. 10) 1927.
4. Rabinowitch, I. M.: Experiences with a High Carbohydrate-Low Calorie Diet for the Treatment of Diabetes Mellitus, Canad. M. A. J. **60**: 489 (Oct.) 1930. Rabinowitch has insisted on an even lower fat intake than have most observers. He rarely prescribes more than 50 Gm. a day.

4a. The cases referred to do not all appear in the article as printed in THE JOURNAL but can be found in the reprint.

carbohydrate, protein and fat and the total calories and available carbohydrate have been averaged for the year in terms of the daily quantities of each. The weight and height columns in each chart are designed to show the range of variation in yearly periods or, as in another group of tables, averaged over a period of years. The figure in the column of the tables listed as "Grams Carbohydrate per Unit of Insulin" is, of course, also a yearly average on a per day basis. This figure is obtained by dividing the average daily total grams of available carbohydrate by the total daily dose of insulin. This may be described as the ratio of insulin to carbohydrate or the number of grams of carbohydrate that each unit of insulin will oxidize. It is the best method that I have been able to devise for the estimation of insulin effectiveness. It may be objected that this method of calculating the effectiveness of insulin is incorrect because it does not include the measurement of that quota of insulin available from the patient's pancreas. This contention is obviously correct, but as there is no means of estimating the influence of the native insulin, I am forced to limit my measurement of the effectiveness of insulin to that quota which is parenterally administered. In children and in other cases of maximum severity, the amount of insulin secreted by the pancreas is surely minimal and reasonably constant. The amount of insulin secreted from the pancreas in the milder forms of diabetes probably varies considerably from day to day and even from month to month, but this variation is greatly minimized when expressed in terms of yearly averages. For the comparative purpose for which I have used it, I believe that this method of estimating the effectiveness of insulin is adequate and at least gives an accurate comparative measure of the action of the parenterally administered insulin in its effect on the oxidation of dextrose. The columns in the tables showing the figures for blood sugar and blood cholesterol are expressed in terms of milligrams per hundred cubic centimeters of blood and, unless otherwise indicated, represent the range of blood sugar and cholesterol during the periods indicated. In the charts appended for cases 2, 3 and 4, the blood sugar and blood cholesterol readings are given as the individual determination.

PROTOCOLS

CASE 2.—Reeve A., born Aug. 27, 1915, admitted May 2, 1919, in whom the onset of diabetes was manifested by symptoms in February 1919 and proved by urinalysis in March, was treated by diet alone from the time he was first seen until Sept. 12, 1922, at which time insulin treatment was begun. His maximum tolerance for food before insulin was begun was below 10 Gm.

TABLE 3.—*High Carbohydrate-Low Fat Diet in Case 2 (Reeve A., Male)*

Year	Diet: Carbohydrate	Protein	Fat	Calories	Total Dextrose	Insulin	Grams of Carbohydrate per Unit of Insulin	Urine Sugar	Range of Blood-Sugar, per Cent	Range of Blood Cholesterol, per Cent	Range of Weight, Pounds	Range of Height
1922-1923	65	60	114	1,526	101	24	4.2	24 Gm.	0.227-0.322	0.28-0.48	43- 70	3'7"
1924	116	65	82	1,462	155	56	2.8	0 to +	0.080-0.333	0.36-0.28	69- 72	4'2"-4'3"
1925-1927	279	81	96	2,304	328	59	5.6	0 to +	0.049-0.434	0.15-0.30	71-102	4'3"-4'10"
1928-1930	317	78	84	2,336	364	62	5.9	0 to ++	0.054-0.418	0.15-0.20	101-124	4'11"-5'4"
1931-1933	452	120	80	3,008	524	81	6.5	0 to +	0.650-0.438	0.17-0.23	118-153	5'4"-5'9"
1934 to June 1	500	120	90	3,298	572	90	6.4	0 to +	0.060-0.211	0.19-0.20	154	5'10"

of carbohydrate, 30 Gm. of protein and 80 Gm. of fat. On this diet, while in the hospital eight days before insulin was started, the urinary dextrose averaged 34.3 Gm. a day.

The subsequent course of the diabetes is summarized in tables 3 and 4. During 1932-1933 and the first three months of 1934 the patient suffered from an extremely severe pansinusitis, which necessitated two radical operations, one on the maxillary sinus and one involving the frontal sinus. Also in 1932 he suffered a compound fracture of both bones in his right arm. Coincidentally with these occurrences it required considerably more insulin to keep him sugar free. At the present time he is going to public school, is leading an athletic life and works in extra hours to help support his family.

TABLE 6.—*Daily Average of Diet and Insulin Dosage in Case 3 (A. B., Female)**

Year	Carbohydrate, Gm.: Total	Average	Protein, Gm.: Total	Average	Fat, Gm.: Total	Average	Calories Average	Units of Insulin: Total	Average	Days Clear of Urine Sugar	Average Sugar Excreted Daily, Gm.	Total Available Carbohydrate, Gm.	Calories per Unit of Insulin	Total Carbohydrate per Unit of Insulin	Range of Weight, Pounds	Range of Height
1922†	882	19	1,982	43	3,255	71	887	None		40	..	44	..	...	39¾	
1922‡	7,973	65	7,269	60	13,643	112	1,508	2,459	20	45	14	87	75	4.4	39-53	4'3"
1923	44,404	122	24,296	67	40,527	111	1,755	13,254	36	41	8.7	153	49	4.3	54-66½	4'3½"-4'4"
1924	43,842	120	22,060	60	32,765	90	1,647	16,572	45	44	14	142	37	3.2	66-69¼	4'4¼"-4'5¼"
1925	76,509	210	25,344	69	30,904	85	1,881	23,135	63	169	5.5	245	30	3.9	69-78¾	4'5¼"-4'8"
1926§	92,998	256	26,254	70	23,570	65	1,889	16,195	45	254	..	298	42	6.6	79-80	4'8",4'10"
1927	112,642	309	28,420	78	31,125	85	2,313	19,743	54	202	..	355	43	6.6	80-94¾	4'10"-5'1"
1928	136,205	372	29,040	79	24,030	66	2,398	25,371	69	204	..	419	35	6.0	94¾-108	5'1"-5'4¼"
1929	116,930	320	28,920	79	24,990	68	2,208	20,332	56	235	..	367	39	6.6	108-110	5'4¼"-5'5½"
1930	127,605	350	29,200	80	27,240	75	2,395	27,625	76	170	..	398	32	5.3	110-129¼	5'5½"-5'6¼"
1931	128,832	352	29,310	80	27,450	75	2,403	49,436	73	268	..	400	33	5.5	127½-131¼	5'6¼"-5'6½"
1932	110,532	302	27,084	74	23,725	65	2,080	20,496	56	256	..	346	37	6.2	126¼-130¼	5'6¼"-5'6¾"
1933	109,505	300	27,000	75	21,900	60	2,037	21,900	60	approx. 360	..	344	34	5.7	123½-135½	5'7"

* A dietitian has always lived with this patient and the averages are computed from daily charts kept throughout the patient's course of treatment. The patient's weight of January 1931 was 127½ pounds and her height was 5 feet 6¼ inches.
† Preinsulin period of forty-six consecutive days.
‡ Insulin was begun Sept. 1, 1922. Average for 122 days (from Sept. 1, 1922 to Jan. 1, 1923).
§ Average for 363 days (2 days in September were omitted in keeping the chart).

CASE 3.—A. B., a girl, born March 4, 1914, admitted April 2, 1921, in whom the onset of diabetes occurred in January 1921, with polyuria, polydipsia and loss of weight, glycosuria being discovered in the early part of March, weighed 42 pounds (19 Kg.) and ranged between 40 and 42 pounds until the time that insulin was first given, Aug. 30 1922. Before insulin was given her maximum food tolerance was 15 Gm. of carbohydrate, 45 Gm. of protein and 85 Gm. of fat.

The subsequent course in this case can be observed in tables 5 and 6. At the present time she is healthy and vigorous and is leading an outdoor life with considerable exercise and is in

excellent physical condition. The menses were established at the age of 14 years.

The patient's early record is more completely set forth by Geyelin and his associates.[5]

CASE 4.—Edwin J. M., born April 29, 1912, admitted Nov. 4, 1922, in whom the onset of diabetes first was manifested by symptoms, Feb. 22, 1918, and proved by urinalysis in March, was treated by diet alone during the period between March 1918 and Nov. 20, 1922. He lost weight steadily from a maximum of 38 pounds (17.2 Kg.) at the age of 6 to 27 pounds (12.2 Kg.) (with edema) on Nov. 20, 1922 (four and one-half years later), at which time insulin was begun. In a control period of three days before insulin was started, on a diet of 20 Gm. of carbohydrate, 35 Gm. of protein and 45 Gm. of fat, averaging 603 calories, the daily excretion of sugar averaged 41.1 Gm. and the daily nitrogen loss was 3.3 Gm.

The course of the diabetes under insulin treatment can be seen in tables 7 and 8. At the present time the boy is engaged in vigorous physical exercise and, aside from transitory infections of the upper respiratory tract, he has enjoyed excellent health during the past eight years.

CASE 5.—Martha Jean C., born May 3, 1922, admitted June 30, 1927, in whom the onset of diabetes occurred Aug. 1, 1925, was desugarized without insulin and kept sugar free on diet alone until Dec. 1, 1925. At this time insulin was started and continued under the care of her local physician until the time of admission. Diet during that interval was 50 Gm. of carbohydrate, 51 Gm. of protein, 85 Gm. of fat and her insulin dosage was 32 units a day. On this diet and insulin dosage she remained sugar free but had gained only 6 pounds (2.7 Kg.) during the eighteen months period.

Diet and insulin were changed as indicated and her course under treatment has continued as shown in tables 9 and 10.

CASE 6.—Harold G., born Jan. 24, 1914, admitted Feb. 24, 1932, in whom the onset of diabetes occurred suddenly in February 1923 with the usual symptoms, almost went into coma. He was treated with insulin from the outset, the total amount ranging from 40 to 75 units a day. The average amount over the period of nine years was 60 units a day. His diet had varied from 50 to 100 Gm. of carbohydrate, from 60 to 100 Gm. of protein and was over 200 Gm. of fat. At the time of his first visit he was showing considerable glycosuria, 4.2 per cent; the blood sugar was 241 mg. per hundred cubic centimeters of blood and blood cholesterol 389 mg.

The subsequent course of events is shown in table 11. He was first put on a diet of 300 Gm. of carbohydrate, 85 Gm. of protein and 75 Gm. of fat with 60 units of insulin a day. He became sugar free within two months and except for moderate amounts of sugar infrequently has remained sugar free ever since. At the time of his first visit he showed marked pitting edema and weighed 118 pounds (53.5 Kg.). He lost 10 pounds (4.5 Kg.) during the first six weeks and has since regained his weight without edema, so that at the present time his weight is 135 pounds (61.2 Kg.).

CASE 7.—Herbert N., born March 1, 1914, admitted June 4, 1932, showed manifestations of the onset of diabetes in January 1930. He was desugarized by starvation and kept sugar free on a low diet (exact figure not known) until October 1930, at which time he was given insulin, and, until admission, was kept on a diet of 80 Gm. of carbohydrate, 90 Gm. of protein and 215 Gm. of fat. Glycosuria had been combated by insulin, which averaged 110 units a day from October 1930 until June 4, 1932. During this period the patient had suffered from many hypoglycemic reactions, some of which had been very severe. His chief complaint, when he was first seen, was that he was hungry all the time.

Since admission the course of the patient's diabetes is summarized in table 12. The total amount of insulin required daily to maintain an aglycosuria has varied from 70 to 52 units a day, and he feels much better as regards physical endurance and mental attitude and is now satisfied with his diet.

TABLE 7.—*High Carbohydrate-Low Fat Diet in Case 4 (Edwin J. M.)* *

Year	Diet					Grams of Carbohydrate per Unit of Insulin	Urine Sugar	Range of Blood Sugar, per Cent	Range of Blood Cholesterol, per Cent	Range of Weight, Pounds	Range of Height
	Carbohydrate	Protein	Fat	Calories	Total Dextrose	Insulin					
1922-1924	76	64	105	1,505	114	43	2.6	+ to ++	0.181-0.625	0.270-0.480	33- 65	3'8"-4'
1925	218	80	92	2,020	266	79	3.4	+ to ++	0.050-0.476	0.150-0.280	65- 76	4'-4'3"
1926-1930	317	90	85	2,393	371	69	5.4	0 to +	0.050-0.454	0.110-0.162	80-129	4'3½"-5'2"
1931-1933	376	92	77	2,565	431	73	5.9	0 to +	0.070-0.476	0.140-0.254	131-149	5'3"-5'5"

* These averages have been computed from the patient's daily charts throughout his course of treatment, and the urine has been tested for sugar at least twice in the twenty-four hour period daily.

TABLE 9.—*High Carbohydrate-Low Fat Diet in Case 5 (Martha Jean C.)*

Year	Diet					Grams of Carbohydrate per Unit of Insulin	Urine Sugar	Range of Blood Sugar, per Cent	Range of Blood Cholesterol, per Cent	Range of Weight, Pounds	Range of Height
	Carbohydrate	Protein	Fat	Calories	Total Dextrose	Insulin					
1926-1927	50	51	85	1,169	81	32	2.5				
	Previous diet before admission										
1927*-1928	150	60	60	1,380	186	24	7.8	0 to ±	0.074-0.175	0.201-0.306	38-42	3'4"-3'6"
1929-1932	282	74	69	2,045	326	21	15.5	0 to +	0.085-0.218	0.116-0.220	49-73	3'11"-4'4"

* Averages for 170 consecutive days (from beginning of treatment to end of 1927).

CASE 9.—Sylvia L. S., born Aug. 14, 1875, admitted Nov. 9, 1933, had lost 35 pounds (16 Kg.) from the date of onset of diabetes, January 1926, until April 1926. She was desugarized with a low diet and remained sugar free but continued to get weaker and was finally placed on a diet of 130 Gm. of carbohydrate, 65 Gm. of protein and 150 Gm. of fat with 32 units of insulin daily. On this diet she had gained approximately 22 pounds (10 Kg.) and said she had remained nearly sugar free but had not been strong and had had a series of boils ever since 1929. Her diet at the time of admission and her insulin dosage were the same as just given. Her blood sugar was 176 mg. per hundred cubic centimeters of blood and her blood cholesterol was 285 mg.

She was immediately put on a diet of 275 Gm. of carbohydrate, 85 Gm. of protein and 85 Gm. of fat with 32 units of insulin a day. This dosage had to be increased to 40 units a day before she was desugarized. She has remained sugar free on this dose. Blood sugar, May 29, 1934, was 105 mg. per hundred cubic centimeters of blood and blood cholesterol was 250 mg. It is interesting to observe that in this patient the blood cholesterol, although it has remained below 220 mg. per hundred cubic centimeters of blood in six determinations from Dec. 4, 1933, until April 27, 1934, has now increased to 250 mg. Concomitantly with this increase in blood cholesterol, the patient admits that she has been overeating the fat content of her diet.

CASE 10.—William I., born Sept. 21, 1910, admitted April 5, 1933, has had diabetes for one year. The onset, in April 1932, was sudden. He was immediately put on a diet of 100 Gm. of

5. Geyelin, H. R.; Harrop, George; Murray, Marjorie F., and Corwin, Eugenia: The Use of Insulin in Juvenile Diabetes, J. Metab. Research **2**: (Nov.-Dec.) 1922. This case is listed as case 2, and cases 2 and 4 in the present paper are listed in Harrop's paper as cases 3 and 7, respectively.

carbohydrate, 50 Gm. of protein and 50 Gm. of fat. He was desugarized for four days with insulin. He had no more insulin until August, and at that time the diet was gradually increased to 150 Gm. of carbohydrate, 120 Gm. of protein and 180 Gm. of fat, with 65 units of insulin a day. He has been on this diet ever since and has remained sugar free. The insulin dosage is still 65 units a day. The blood sugar at this time was 125 mg. per hundred cubic centimeters of blood and blood cholesterol was 368 mg.

On admission the patient was immediately put on 350 Gm. of carbohydrate, 120 Gm. of protein and 90 Gm. of fat, and it was possible to keep him sugar free on a dose of 52 units daily within three weeks of the time the diet was changed. From June 1, 1933, until June 1, 1934, the patient has remained on this diet and has averaged 46 units of insulin daily and the urine has remained sugar free. The most recent blood sugar, done in January 1934, was 125 mg. per hundred cubic centimeters of blood, and blood cholesterol 142 mg. The patient writes that he has gained several pounds, and that he has considerably more physical endurance than he had on the previous lower carbohydrate-higher fat diet.

TABLE 11.—*High Carbohydrate-Low Fat Diet in Case 6 (Harold G.)*

Year	Diet					Insulin	Grams of Carbohydrate per Unit of Insulin	Urine Sugar	Range of Blood Sugar, per Cent	Range of Blood Cholesterol, per Cent	Range of Weight, Pounds	Range of Height
	Carbohydrate	Protein	Fat	Calories	Total Dextrose							
1923 (onset) to 1932	65	80	200	2,380	113	60	1.9	1%-5%				
1932, February to June	350	83	78	2,434	400	58	6.9	0	0.098-0.241	0.146-0.389	118-128	5'3"-5'4"
1933, February to December	415	83	80	2,712	465	55	8.5	0	0.066-0.125	0.189-0.225	134-135	5'7"-5'4½"

COMMENT

From the tables and charts it will be observed that the effectiveness of each unit of insulin per gram of carbohydrate, i. e., insulin effectiveness, increases as the carbohydrate is increased and the fat in the diet is decreased. Generally speaking, this increased effectiveness of insulin is more striking when the carbohydrate of the diet has reached a certain maximal amount, apparently specific for a given individual. This increase of insulin effectiveness is, I believe, maximal when the relation of carbohydrate to fat in the diet is 3 or 4 Gm. of carbohydrate to 1 Gm. of fat. Not only in this group of ten patients, but also in the remaining 140 cases studied, I have noted that in most patients, after a transfer from diets low in carbohydrate to diets maximally high, the effectiveness of insulin is not fully attained until a certain lower level of fat is achieved. As an instance of this, I shall cite case 2, in which in 1926 after the fat had been lowered 20 Gm., the effectiveness of insulin was increased from 3.9 Gm. of carbohydrate per unit of insulin to 6.6.

From the protocols and tables presented, it will also be observed that the absolute amount of insulin required to oxidize increasing amounts of carbohydrate is often augmented but the increase of insulin is in most instances not proportional to the increase of carbohydrate. Of the total number of 150 cases, in thirty-nine cases, or 26 per cent, I have been able to increase the carbohydrate intake of the diet from 100 to 200 per cent or more without requiring additional insulin (cases 1, 6, 7 and 10). Some of these cases have required even less insulin on the higher carbohydrate diets than they had required on the lower carbohydrate diets (table 12). Sixty-nine of my patients, or 46 per cent of the 150 cases studied, have required less than a 20 per cent increase in insulin when transferred from low to high carbohydrate diets. In this group the change of diets has often involved an increase in carbohydrate which amounted to more than 300 or 400 per cent.

In forty-two cases, or 28 per cent of the total number of cases, the increase of insulin required after the change from a low to a high carbohydrate diet amounted to an increase in insulin of from 20 to 50 per cent, but rarely more than this. In many of these cases such increases in insulin have been temporary, and after the lapse of a year or more it has been possible to decrease the insulin. There are a few patients, however, who show a steadily increasing need for insulin in spite of the continuation of high carbohydrate diets, but these instances are usually cases in which no attempt has been made to bring about extreme reduction of fat. It is also possible that the effect of low grade chronic infections, such as sinusitis, and the breaking of diet, particularly the overeating of fat, is responsible for the increasing need for insulin. As an example of the temporary need for increased insulin after the patient has been transferred from a low to a high carbohydrate diet, I may cite case 3. This patient in January 1925, on a diet of 80 Gm. of carbohydrate, 63 Gm. of protein and 97 Gm. of fat, averaging 1,441 calories, required 47 units of insulin to keep glycosuria at a level of 15 Gm. daily. The diet was changed to 200 Gm. of carbohydrate, 70 Gm. of protein and 85 Gm. of fat in April and during this month and the following month the patient required 81 units of insulin daily to maintain a sugar-free urine. After this, the total insulin needs slowly decreased until in October, November and December she required only 46 units a day to keep the urine sugar free on a diet of 255 Gm. of carbohydrate, 70 Gm. of protein and 65 Gm. of fat. The insulin to carbohydrate ratio or dextrose equivalent of insulin had

TABLE 12.—*High Carbohydrate-Low Fat Diet in Case 7 (Herbert N.)*

Year	Diet					Insulin	Grams of Carbohydrate per Unit of Insulin	Urine Sugar	Blood Sugar, per Cent	Blood Cholesterol, per Cent	Range of Weight, Pounds	Range of Height
	Carbohydrate	Protein	Fat	Calories	Total Dextrose							
Oct. 1930 to June 1932	80	90	215	2,615	134	110	1.2	0	0.247*	0.269*	106-140	5'7"
June 1932 to Jan. 1934	342	90	80	2,448	396	56	7.0	0	0.183†	0.189†	140-147	5'7"-5'8"

* Indicates value at one determination at end of period.
† Indicates average values of fourteen different determinations at intervals.

risen from 2.3 in January 1925 to 7.6 in December 1925. Every urine voiding was tested for sugar daily throughout the year.

One of the objections that has been made to the use of the high carbohydrate diet as I have employed it is that it is a diet which, of necessity, provides for normal nutrition and, in some instances, overnutrition. This is, of course, contrary to one of the oldest traditions of diabetic treatment. Undernutrition has for many years been advocated as a method of treatment for diabetes; in fact, by some it has been regarded as one of the fundamental principles of treatment. The assumption that undernutrition was the fundamental principle of diabetic treatment became widespread subsequent to 1914, owing largely to its advocacy by F. M. Allen. Allen and many of his adherents insisted that tolerance for carbohydrate (and also total food tolerance) could be increased by the persistent maintenance of undernutrition in any case of diabetes. The increases of tolerance that followed starvation and subcaloric diets were and still are readily obtainable in any form of diabetes, particularly the milder forms of the disease. In children, however, these increases following undernutrition are comparatively transitory in nature and are invariably followed by a steadily decreasing tolerance, so that in spite of continuous undernutrition a total loss of tolerance eventually takes place. In adults, tolerance for food can be increased for much longer periods of time by treatment with undernutrition, but even in these cases a permanent increase is not obtainable. It must therefore be concluded that no permanent increase of food tolerance occurs as the result of undernutrition. Owing to the persistence with which a large group of clinicians still cling to the fallacious theory that undernutrition is a sine qua non of diabetic therapy (even after the discovery of insulin), treatment with high carbohydrate diets and insulin has been decried. As the result of my experience during the past ten years with diets high in carbohydrate and normal in calories, I have been convinced that this is the treatment of choice and that the diabetic patient so treated enjoys better health with no observable detriment to the fundamenal state of his diabetes.

Although an attempt was made to establish normal nutrition in all my insulin treated cases of diabetes, I have also made an effort to avoid appreciable degrees of overnutrition. It has not always been easy to achieve this goal. The avoidance of overnutrition is desirable in all patients, and particularly in adults past middle age or in patients suffering from cardiovascular disease. In children I have noticed that a certain moderate degree of overnutrition is occasionally unavoidable and in most instances is corrected within a year or two without the necessity of curtailing the diet. It is doubtful whether overnutrition or obesity in this group of cases has any permanent harmful effect on the diabetes. Overnutrition is particularly common in girls at the time of puberty. Attemps to correct it by a reducing diet are usually unavailing because so many of these children prefer to eat normally rather than to lose weight. Insulin effectiveness is undoubtedly diminished if overnutrition is allowed to continue over long periods.

THE EFFECT OF THE HIGH CARBOHYDRATE DIET ON THE BLOOD SUGAR LEVEL

Although it is not invariably true, the blood sugar level is usually lower after the establishment of the high carbohydrate regimen than when a patient was receiving the low carbohydrate-high fat diet. This observation coincides with that of Rabinowitch.[4] The diurnal variations of blood sugar are less extreme when patients are treated with the high carbohydrate-low fat regimen than when they are treated with other dietary regimens.

Insulin Reactions (Hypoglycemia).—These are less frequently observed in patients receiving the higher carbohydrate diets than when they receive the lower carbohydrate diets. It is my impression that these reactions are also less severe and less prolonged. Whether with low or with high carbohydrate diets, the best method of minimizing and in most instances of excluding insulin reactions is to require a division of the food into five or six feedings a day, particularly the carbohydrate content of the food.

Blood Cholesterol.—As Rabinowitch [4] has also demonstrated, one of the most striking features of the change from low to high carbohydrate diets has been the invariability with which a preexisting hypercholesterinemia can be reduced to normal blood cholesterol level. With various types of diet other than high carbohydrate, particularly when the fat of the diet constitutes more than 50 per cent of the calories, there are a few patients who show a persistent hypercholesterinemia for many years. This occurs even in the absence of glycosuria, ketonuria and hyperglycemia. Its persistence is often striking even when the diet contains more grams of carbohydrate than fat. For example, patient 4 maintained a hypercholesterinemia for nearly two years. During the major portion of that time the average diet contained 130 Gm. of carbohydrate, 80 Gm. of protein and 90 Gm. of fat, and in all other respects

TABLE 14.—*High Carbohydrate-Low Fat Diet in Case 9 (Sylvia L. S.)*

Year	Diet					Grams of Carbohydrate per Unit of Insulin		Urine Sugar	Range of Blood Sugar, per Cent	Blood Cholesterol, per Cent	Range of Weight, Pounds	Range of Height
	Carbohydrate	Protein	Fat	Calories	Total Dextrose	Insulin						
1927 to 1933 (Nov.)	130	60	150	2,110	166	32	5.2	0 to +++	0.170	0.280	103-125	5′5¾″
1933 (Nov.) to May 1934	300	100	90	2,410	360	40	9.0	0 to ++	0.116-0.180	0.227	125-135	

TABLE 15.—*High Carbohydrate-Low Fat Diet in Case 10 (William I.)*

Year	Diet					Grams of Carbohydrate per Unit of Insulin		Urine Sugar	Blood Sugar, per Cent	Blood Cholesterol, per Cent	Range of Weight, Pounds	Range of Height
	Carbohydrate	Protein	Fat	Calories	Total Dextrose	Insulin						
1932-1933	150	120	190	2,790	222	65	3.4	0	0.125	0.368	145	5′11″
1933-1934 (May)	350	120	90	2,690	422	46	9.2	0	0.125	0.142	147	

his diabetes was under ideal control. Within six weeks after the diet was shifted to 250 Gm. of carbohydrate, 80 Gm. of protein and 80 Gm. of fat, the blood cholesterol fell to within normal limits and has remained at this level ever since. It will be observed that, although the ratio of total dextrose to fat in the first diet was 2 to 1, hypercholesterinemia continued until the ratio was changed to 3.8 to 1. I am able to cite fifteen other similar examples.

My experience leads me to the conclusion that there are no cases of persistent hypercholesterinemia which cannot be overcome by the administration of a high carbohydrate diet. The requisites for such diets, those which will overcome hypercholesterinemia, are as follows:

1. The number of grams of carbohydrate in such diets must bear the ratio of at least 3 and preferably 4 Gm. to every 1 Gm. of fat.

2. The diets must contain adequate calories for the maintenance of normal weight.

It has sometimes happened that after several years of treatment with these normal diets, and the ratio of carbohydrate to fat as prescribed is 3 to 1 (or more), hypercholesterinemia has developed; but it has invariably been found that when this occurs the patients have either through carelessness been overeating in fat or undereating in carbohydrate. The same effect is, of course, obtained if patients ignore their urine tests over long periods of time so that glycosuria develops to such an extent that the available carbohydrate and its relation to the fat metabolized brings about a ratio of less than 3 Gm. of carbohydrate to 1 Gm. of fat in the total metabolic mixture.

Among the advantages of feeding high carbohydrate or normal diets as compared with lower or medium carbohydrate diets, which have not so far been referred to, are the following:

1. The majority of patients insist that they feel better.

2. Many of them remark that they possess so much more strength and physical endurance, and they also feel that, as far as their dietary habits are concerned, "they are like normal human beings."

3. They do not suffer from hunger and are therefore better patients as far as adherence to their dietary regimen is concerned.

SUMMARY AND CONCLUSION

1. Patients treated with high carbohydrate-low fat diets achieve greater effectiveness of insulin as judged by the ratio of units of insulin to grams of carbohydrate oxidized.

2. The administration of such diets overcomes hypercholesterinemia.

3. In the majority of instances, blood sugar levels are reduced after the administration of high carbohydrate diets.

4. Hyperinsulinism is less common and less severe.

5. Complicating conditions such as tuberculosis, gangrene and cardiovascular disease are less common when patients are being treated with the high carbohydrate diet (normal calories).[6]

6. After ten years of application of the high carbohydrate diet, the majority of patients show no loss of food tolerance or any other demonstrable retrogression of the diabetes.

103 East Seventy-Eighth Street.

6. See reprint.

INSULOGENIC STIMULATION OF SEXUAL DEVELOPMENT

GEORGE A. WILLIAMS, M.D.
AND
ROBERT L. WILLIAMS, B.S.
ATLANTA, GA.

In spite of the exhaustive study of the pancreas and its hormones during recent years, data on the interrelationship of this organ with other endocrines are discouragingly conflicting. This is especially true with regard to the part played by the islands of Langerhans in the growth and development of the individual.

Bramwell [1] in 1904 and Moorhead [2] in 1920 described infantilism due to pancreatic insufficiency. It is highly probable, however, that their cases were due to general malnutrition and were not directly the result of malfunction of the pancreas.

Fig. 1.—Patient (at left) in a school group of the same age four months before insulin therapy.

Chabanier, Lebert and Lumière [3] conclude that insulin specifically stimulates growth processes and that accelerated development following its use is not dependent on improved general health. Lereboullet and Nobecourt [3] do not share this view, however. Homans [4] found that pancreatic pathologic changes in diabetes are limited to the beta cells of the islands and thought the alpha cells must have a special function. In American literature, Allen [5] and others have suggested that the islands produce a trophic hormone, but most authors attribute results obtained from the use of insulin to improved nutrition, increased vitamin intake and other such factors. Frank and his co-workers [6] in their

1. Bramwell, B.: Scot. M. & S. J. **14**: 321, 1904.
2. Moorhead, T. G.: Dublin J. M. Sc. **149**: 1 [Jan.] 1920.
3. Quoted by Fleiderbaum.[7]
4. Homans, J.: Proc. Roy. Soc., London, series B **86**: 73, 1912.
5. Allen, F. M.: J. Metab. Research **1**: 5, 1920.
6. Frank, R. T.; Goldberger, M. A., and Spielman, Frank: Present Endocrine Diagnosis and Therapy, J. A. M. A. **103**: 393 (Aug. 11) 1934.

recent rather nihilistic summary of endocrine therapy in gynecology state that they are not convinced that insulin is of any value in that field.

Fleiderbaum [7] has reported two cases of diabetes mellitus in which marked improvement in sexual development and function resulted from insulin therapy. Both patients were males, one an adolescent and the other an adult. He agrees with Allen that the islands produce a trophic hormone in addition to insulin and concludes that commercial insulin does not always con-

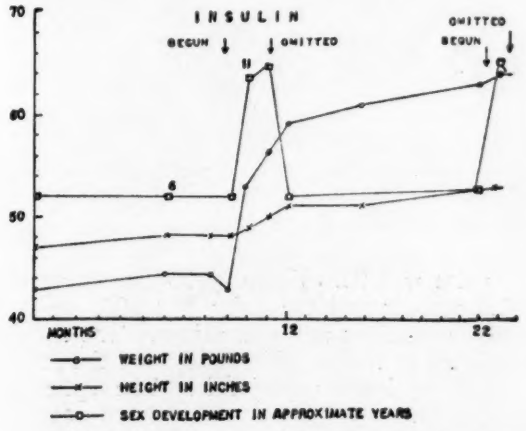


Fig. 2.—Influence of insulin on height, weight and secondary sexual characteristics.

tain both products of the gland. Fleiderbaum's cases are open to the usual criticism that improved body function, including growth and sex activity, are to be expected in diabetic patients properly treated with insulin. He suggests, however, that infantilism due to failure of the alpha cells without coexisting beta cell atrophy (diabetes) may occur.

The present case of insulogenic acceleration of development is reported because it occurred in a nondiabetic child as a result of the administration of insulin, and because the signs and symptoms of precocity promptly regressed when the use of insulin was discontinued.

REPORT OF CASE

A native white girl, aged 8½ years, had been markedly underweight and slightly underheight all her life (fig. 1). An only child, she was somewhat neurotic and had a poor appetite. Getting her to take sufficient nourishment had always been a problem to the mother. She had had the usual diseases of childhood without complications or sequelae and had experienced one severe attack of acute pyelitis.

Examination revealed a striking absence of subcutaneous fat and general underdevelopment for her age. Mentally, she was alert and active and was very successful in her school work. Blood count, blood Wassermann reaction, urinalyses, stool examination, Mantoux test and roentgen study of the chest were all essentially normal. Fasting blood sugar was found to be 95 mg. per hundred cubic centimeters.

No definite disease entity being discovered, administration of insulin, 5 units daily before breakfast, was begun July 10, 1933, to improve the appetite and increase the food intake. Little result was seen until the dosage of insulin was increased to 10 units daily before breakfast. The mother could not detect any appreciable improvement in appetite, but a remarkable increase in weight and height occurred (fig. 2). August 15 the patient complained of pain in both breasts and cramping pain in the lower part of the abdomen. Examination revealed that the mammary glands were enlarged and engorged. The parenchyma appeared as tense, flattened, conical disks about 4.5 cm. in diameter and quite tender to palpation. The nipples were actively erectile, and the areolar glands were prominent. No tenderness or muscle resistance could be elicited in the abdomen, but the patient indicated that she had cramping pain in the midline low in the pelvis.

The abdominal pain ceased after a few days, but the breast fulness continued until September 14, when the abdominal pain recurred and the breast signs increased in intensity. At that time it was noted that the fat accumulation was assuming the adult feminine distribution in the pectoral, lower abdominal, perineal, gluteal and femoral regions (fig. 3). The facial appearance was that of an adolescent. There was a growth of fine hair over the forearms, in the axillae and on the mons pubis. The labia majora were fat and there was considerable vaginal secretion of the adult type. A satisfactory rectal examination was permitted and revealed the uterus low in the pelvis, normal in position and about the size to be expected in a girl of 11 or 12 years of age. No adnexal masses were detected.

It was presumed that the growth of secondary sexual characteristics and the apparent stimulation of the vaginal epithelium and uterus by estrogenic substance were due to insulogenic acceleration of anterior pituitary activity. The child being somewhat introspective, it was thought best to discontinue the use of insulin to spare her the possible ill effect of precocious menstruation on such an individual.

After withdrawal of the insulin there was no loss of fat, but the breast phenomena promptly disappeared and the pelvic cramping did not recur. Steady gain in height and weight continued, but at a much slower rate. Ten months after insulin was omitted, the functional breast tissue could not be distinguished from the mammary fat. The uterus was still low in the pelvis but had decreased one third in size. The adult type of vaginal secretion was not evident, and hair growth had regressed to its former stage.

Fig. 3.—The patient eight weeks after institution of insulin therapy. Compare secondary sexual characteristics and facial appearance with figure 1.

Aug. 5, 1934, insulin was resumed in the former dosage. Within two weeks the patient had gained 2 pounds (0.9 Kg.) and the breast phenomena recurred. There was no cramping, but she complained of a vaginal discharge which proved to be

7. Fleiderbaum, J.: Ztschr. f. klin. Med. **124**: 86, 1933.

typically adult in character. Increased hair growth on the pubis was noted. For the reason before mentioned, insulin was discontinued, to be followed by an immediate disappearance of the breast and vaginal signs.

SUMMARY

Administration of insulin to a poorly developed nondiabetic girl 8½ years of age resulted in striking acceleration of body growth and sexual development. This was manifested by increase in height and weight, stimulation of the mammary glands, ovaries and uterus, assumption of the adult type of fat distribution, and a growth of fine body hair. Discontinuance of insulin was followed by prompt regression of secondary sexual phenomena. Body growth continued, but at a less rapid rate. Resumption of insulin after a lapse of ten months resulted in prompt reappearance of the sexual phenomena, to regress as soon as insulin was again omitted.

384 Peachtree Street N. E.

THE CASE OF PATRICIA MAGUIRE

EUGENE F. TRAUT, M.D.
OAK PARK, ILL.

I am publishing the history of the case of Patricia Maguire because of the publicity attendant on it and because of the numerous inquiries concerning the patient. Its principal interest has been the prolonged period of somnolence.

Feb. 5, 1932, Patricia Maguire, a secretary and 26 years old, consulted me because of inability to stay awake. She had had a slight cold four days before. Her tonsils had been removed after several attacks of quinsy many years ago. She had had an uncomplicated, mild influenza in 1918. I had seen her and examined her completely at intervals since May 1930. In the course of these examinations her basal metabolic rate was determined to be normal, her sinuses were found clear by Dr. John Theobald. Urinalysis and blood counts had given normal results. On the last periodic examination, in November 1931, she presented normal conditions and had no complaints.

Her sleepiness, Feb. 5, 1932, consisted of inability to stay awake on elevated trains and drowsiness at work. She came to my office unaccompanied and was very alert. I was unable to detect any abnormalities in a complete examination. In particular there was no weakness of the extremities or the cranial nerves. Her temperature was 98 F. and her pulse was 76. I referred her to an ophthalmologist, who could detect no abnormalities.

The tendency to sleep increased. She complained of forgetfulness. She was brought to my office, February 15, with diplopia, left external strabismus and ptosis of both upper eyelids. Dr. Palmer Good reported slight contraction of the right visual field and normal vestibular responses. Her temperature, pulse and respiratory rate were normal.

She was sent to bed. Her spinal fluid was clear and under low pressure. It contained 870 cells, all lymphocytes. The Wassermann reaction was negative and the colloid gold test 0000133320. The Ross-Jones test was faintly positive. The Kahn reaction was negative in the blood. Urinalysis showed no abnormalities. The hemoglobin was 76 per cent, the erythrocytes 4,500,000 and the leukocytes 11,000. February 17 her temperature was 99.4 F. She was irrational. The stupor increased so that she was unable to swallow. She vomited occasionally, but the vomiting was not projectile. Nasal feeding was instituted on her third day in bed. Blood culture according to Clawson's method [1] yielded short diplococci after five days' incubation. On isolation, most of these were gram positive. Morphologically and culturally they resembled those described by Rosenow in the brains of encephalitis patients. Heavy intracerebral inoculations into rabbits caused stupor and flaccid paralysis of the hind legs after seventy-two hours in three of the five animals inoculated. The brains and cords of these animals showed minute punctate hemorrhages. During an observation of four months after intravenous injections of heavy suspensions of the blood organism, three rabbits showed no abnormalities. I later obtained similar organisms from the blood of two of three patients with acute encephalitis who had either been in St. Louis or had been in contact with St. Louis people at the time of the 1934 epidemic in that city. Cultures of the spinal fluid were grossly contaminated.

February 21 the rectal temperature had risen to 101 and the pulse was 92. February 25 the temperature was 101.6 rectally and the pulse was 100. She had involuntary urinations and defecations. The temperature continued to rise to 104 rectally and the pulse to 120. Vomiting become projectile. The optic disks swelled slightly.

February 27, Dr. Peter Bassoe found the following conditions: The patient was in a deep stupor but responded a little to supra-orbital pressure by drawing the arms and legs up. There was no neck stiffness, and Kernig's sign was negative. The pupils were small and reacted normally. The eyegrounds were normal. The wrist, elbow and knee reflexes were normal. There was a slight ankle clonus on both sides. A Babinski sign was present on the right side. The abdominal reflexes were present but weak. Lumbar puncture yielded a clear fluid under definitely increased pressure. He confirmed my diagnosis of acute epidemic encephalitis.

She developed generalized rigidity of the "extrapyramidal" type. Projectile vomiting continued with the fever. This febrile state lasted from Feb. 17 to March 8, 1932. The fever had a gradual rise to 103, where it remained for three weeks and then gradually descended to normal. There were elevations of fever 1 or 2 degrees occasionally for three weeks following the continued fever. As the fever disappeared, the rigidity relaxed. She twitched and jerked at intervals. Any of her extremities would have a short, generalized clonic spasm. These convulsive movements were often marked enough to throw her out of bed. She yawned a great deal and grimaced, holding her mouth pulled up at either side. She would not answer but would draw away from painful stimuli. Convulsive movements of the jaws required the insertion of a gag to protect her tongue and cheeks. She lay for hours with the neck, arms and legs acutely and rigidly flexed. During this time (in the first part of March 1932) the deep reflexes were brisk. The abdominal reflexes were absent. Babinski's sign was positive bilaterally. The eyes remained immobile to light. The swelling of the optic disks receded. During the acutely febrile part of her illness, treatment consisted of nursing care, repeated spinal drainages, intravenous injections of 50 per cent dextrose in amounts varying from 50 to 100 cc., and sodium cacodylate intravenously.

1. Traut, E. F.: Blood Cultures in Chronic Arthritis, J. Infect. Dis. **52**: 230-235 (March-April) 1933.

In April 1932 her eyes would follow a light. She swallowed fluids poured into her mouth through the catheter. She did not respond to sound but would be roused to restless movement by noise and would squirm about and groan. A culture of the blood yielded no growth.

A liquid diet affording 2,500 calories and 3,000 cc. of fluid was administered through a nasal catheter for two months. It consisted of four coddled eggs, 1 pint of milk, one pint of cream, the juice of six oranges, cooked cereal, thin custard, vegetable soup and brewers' yeast. After the fever subsided, one-half ounce (15 cc.) of cod liver oil was added. She gained weight so rapidly that the caloric value had to be reduced.

When swallowing returned, the catheter was placed in her mouth. She still drinks in this manner, lying on her back with her head turned to the side.

She had slight elevation of the temperature and pulse for months after the acute febrile period had passed. From July 9 to Sept. 7, 1932, she was given subcutaneous injections of a whole killed bacterial suspension made from the organisms found in her blood. The first injection was 10 million organisms and the final dose was one billion. The vaccine was given twice weekly. Neither local nor general effects were noted.

The vomiting relieved by alkalis and milk was often preceded by movements suggesting epigastric pain. The vomiting would be followed by relaxation and rest. Particularly when, Sept. 7, 1932, blood was vomited, it was felt that the patient was suffering from peptic ulcer due to brain injury.[2] The vomiting stopped promptly on institution of a modified Sippy ulcer management. The vomiting recurred on discontinuance of the alkalis and milk and again was controlled by ulcer management.

In January 1933 she would protrude her tongue when requested. This was the first definite sign of hearing or understanding. In February 1933 she had a chill and a fever of 105 with pneumonia involving the whole lower lobe of the right lung. She became very cyanotic. She was placed in an oxygen tent and given Felton's antipneumococcus serum types I and II intravenously. She received 40,000 units within twelve hours of the initial chill. Her pulse and respiration stopped while the serum was being given. Epinephrine hypodermically resuscitated her. In the following twelve hours she received 40,000 units. Within seventy-two hours of the onset of pneumonia she had a normal temperature, normal pulse and normal respiratory rate. Auscultation showed resolution. Her convalescence from the pneumonia was uneventful. Anterior Pituitary Liquid (Armour) was given hypodermically on alternate days with a daily oral dose of 2 grains (0.13 Gm.) of whole thyroid. Two weeks of this regimen produced no change in the patient.

Blood was drawn from the patient's arm and given intramuscularly in her buttock in doses increasing from 5 cc. to 20 cc. without altering her condition.

Dr. W. J. Potts transfused 500 cc. of blood directly from her healthy stepfather into the patient without effect. The patient was given intravenous and intraspinal injections of serum from two individuals who had had encephalitis eight and ten years ago. The serums were not pooled. In all, 250 cc. of these serums was given intraspinally in sixteen injections and 1,050 cc. was given intravenously in the same number of injections. An intravenous and an intraspinal injection was given twice weekly. An amount of spinal fluid was always removed slightly exceeding the amount of serum injected. Such injections were regularly followed by a chill and fever of 102. At the termination of the serum therapy she was more alert and would resist and pull away from painful stimuli.

Ten cc. of Pregl's solution of iodine was injected intravenously twice weekly for three weeks without any change in the patient's condition.

Fifteen chills at semiweekly and weekly intervals were induced by intravenous typhoid vaccine. She seemed unchanged after these injections.

Colloidal sulphur (Diasporal) was injected intramuscularly twice weekly for five weeks; 0.15 Gm. and 0.3 Gm. of neoarsphenamine were given intravenously without apparent effect.

As measured by her ability to utilize 100 Gm. of dextrose by mouth, her sugar tolerance was moderately decreased. There was no glycosuria. The figures were 108 mg. of dextrose taken starving, 154 mg. one-half hour after the dextrose, 192 mg. one and one-half hours after the oral sugar, and 150 mg. two and one-half hours after the dextrose. Such a disturbance in the carbohydrate metabolism is common to many chronic infections.

She was given fever in a cabinet heated with a large infra-red unit. The fever varied from 101 to 104 F. rectally for 136 hours between September 1933 and March 1934. Each treatment lasted four hours. She had three attacks of heat shock while taking the fever treatments. Because of these and because no immediately favorable response to the fever was noted, the hyperpyrexia was discontinued.

Scopolamine, $\frac{1}{100}$ grain (0.00065 Gm.), was given four times daily with improvement in the drooling. It is occasionally given at night for restlessness.

During the last seventeen months there have been signs of returning intelligence. For over a year she has grunted and rolled about when she desires to void. She has been in stupor about 80 per cent of the time from 5 a. m. to 8 p. m. During the night she is apparently in a deep natural sleep. During the day she lies for the most of the time with tensely flexed arms and closed eyes, with her head turned to the side. She drools. If aroused by the entrance of some one she may look at the person and then more firmly flex her arms, make athetoid movements with the thumbs and fingers, hyperextend the left great toe and grimace. The grimace consists of pulling the right corner of her mouth up and pulling the left corner down. Meanwhile she focuses the right eye. The left eye is everted. She rolls about, groaning. The pupils are equal, regular, moderately contracted and respond in accommodation. They do not respond to light. The wrists are flexed and the fingers clench the flexed thumbs. She has recently been awake for eight or ten hours of the day with the eyes open and an alert expression. Excepting for the failure of the pupils to react to light and the ability to move the right eye past the midline to the left, there is no cranial nerve involvement. All the deep reflexes are present and of normal amplitude. The abdominal reflexes are absent. The right plantar response is a normal flexion. The left plantar reflex consists in further extension of the already extended left great toe. The bowels are emptied by a daily enema. She will protrude her tongue and follow a finger with her eyes. She will blink her eyes if a finger is thrust at them. If her arm or leg is rotated and she is directed to hold the extremity still

2. Cushing, Harvey: Peptic Ulcers and the Interbrain, Surg., Gynec. & Obst. **55**: 1 (July) 1932.

after twenty rotations, she will stiffen the arm or leg at the proper time without being informed of the number of rotations made. She will grasp a finger or, at times, raise her hand or smile on demand. She will read and follow these commands if written on a slate. When asked how many children various families had when she became ill, she designates the correct number by raised fingers. When told of additions to these families within the last three years she will give the correct new number if asked several days following the time she was informed. She also signaled that her uncle had died two years ago. She has recently held her head up while sitting. She watches people working in her room. She will stop eating to investigate the actions of another person in the room. She nods the head to answer a question in the affirmative. When asked how many of five apples remained after selling two, she raises three fingers. She responds best to her mother's request. She apparently distinguishes her mother from others.

She has a normal appearance and proportions when relaxed. The rectal temperature varies from 98 to 99.6. The pulse is 80 and regular. There has been a gradually developing asymmetry of the legs. The right leg is one-half inch shorter and the right thigh is one inch less in circumference than the left. The patient moves the right leg more than the left. Massage and passive motion have failed to remove this asymmetry. Her hair distribution has not altered. Her state of nutrition can be altered at will by her food intake. Menstruation ceased at the onset of the illness. It returned and has been normal for six months.

DIFFERENTIAL DIAGNOSIS

The patient never had neck rigidity or Kernig's sign. The stormy febrile onset, lack of focal symptoms or signs with minimal and quickly disappearing edema of the optic disks have been points against the presumption of cerebral tumor. Her continued improvement is more significant evidence against cerebral neoplasm. Her grimaces and lack of speech suggesting catatonia are accompanied by a pupil practically immobile, right rectus palsy and positive Babinski signs ruling out catatonia, hysteria and malingering. The mode of onset and the nature and grouping of symptoms are of the kind common in epidemic encephalitis. The unusual feature is the long duration of the somnolent stage.

SUMMARY

Within a period of three weeks a young, previously healthy woman developed stupor accompanied by fever, leukocytosis and bacteremia. The spinal fluid was clear but showed pleocytosis, increased globulin and an abnormal colloidal gold curve. The febrile stage and the deep stupor lasted three weeks. Various chemicals, vaccines, serums and hyperpyrexia were used. They are not known to have altered the course of the illness. Excepting occasionally scopolamine for sleep, she has had no medication since Feb. 28, 1934. She was given more than 1,000 feedings by nasal catheter without developing aspiration complications.

The patient is very well nourished and has good color. Her muscles are large and strong. She has not spoken or made any purposeful movements except those of defense. She lies inattentive with shut eyes most of the time. The pupils do not react to light or in accommodation. The left great toe is constantly and rigidly hyperextended. She is fed by spoon or a catheter in the mouth.

715 Lake Street.

CORONARY ARTERY THROMBOSIS WITH PERICARDIAL EFFUSION

A. M. MASTER, M.D.
AND
HARRY L. JAFFE, M.D.
NEW YORK

Within a short period of six months two cases of pericardial effusion following coronary artery occlusion have been observed. It is thought that this condition may be diagnosed clinically and that it is one which will be found more frequently.

The reported incidence is indeed small. In a review of the etiology of 360 cases of pericarditis, Gerke [1] did not mention coronary artery occlusion. In Levine's monograph [2] on coronary thrombosis a pericardial effusion was encountered in only one patient in a series of 145. This effusion was not suspected during life, but 1,000 cc. of pericardial fluid was found at postmortem examination. White [3] in his book on heart disease did not cite coronary artery thrombosis as a cause of pericarditis with effusion. However, in 1932 Camp and White [4] reported their observations in 126 cases of pericardial effusion; and in two cases in which death occurred with evidence of chronic passive congestion, an "associated" coronary occlusion was found. In the same year, Smith and Willius,[5] in the postmortem examinations of sixty individuals who had pericarditis with effusion, remarked that in two cases there was acute cardiac infarction, the result of coronary thrombosis. It will be seen that, although the literature on the subject is small, there is evidence that coronary artery thrombosis with pericardial effusion may be found at postmortem but missed during life. The following two patients survived and it is thought that more such cases will be observed if the foregoing facts are kept in mind:

CASE 1.—An obese, well preserved brewer, aged 60, admitted Sept. 21, 1933, and discharged Nov. 19, 1933, had acquired syphilis at the age of 23 years, but after treatment the Wassermann reaction had become negative. Eight years before admission to the hospital he had experienced precordial oppression and dyspnea constantly for several months; since then these complaints had been occasioned by exertion. He was found to have arterial hypertension. Three weeks prior to admission he was suddenly seized with sharp precordial pain radiating to the shoulder, associated with extreme dyspnea and sweating. After several days he was again comfortable. However, the symptoms recurred one week before admission with such intensity as to force the patient to bed. He entered the hospital in extreme dyspnea and orthopnea, with cyanotic ashen facies and marmorated skin. The cervical veins were dilated. Fine râles were heard at both bases. The left border of the heart was almost at the anterior axillary line, the right border 2 cm. beyond the sternum. The cardiac rhythm was entirely irregular, the rate 140 beats per minute. There were a rough systolic-diastolic murmur and thrill at the aortic area, which became faint at the apex. The liver percussed 2 cm. below the costal margin; there was no edema of the feet. The blood pressure was 175 systolic, 65 diastolic. The blood contained 20,000 white blood cells per cubic millimeter, of which 84 per cent were polymorphonuclears. The Wassermann reaction was negative.

From the Cardiovascular Service and the Medical Services of Dr. George Baehr and Dr. B. S. Oppenheimer, Mount Sinai Hospital.

1. Gerke, A. A.: Die Aetiologie der Perikarditis, Virchows Arch. f. path. Anat. **278**: 1, 1930.
2. Levine, S. A.: Coronary Thrombosis: Its Various Clinical Features, Medicine **8**: 245 (Sept.) 1929.
3. White, P. D.: Heart Disease, New York, Macmillan Company, 1931.
4. Camp, P. D., and White, P. D.: Pericardial Effusion: A Clinical Study, Am. J. M. Sc. **184**: 782 (Dec.) 1932.
5. Smith, H. L., and Willius, F. A.: Pericarditis: III. Pericarditis with Effusion, Arch. Int. Med. **50**: 192 (Aug.) 1932.

During the next week the condition of the patient continued to be critical. The cardiac rhythm was rapid, with frequent periods of auricular fibrillation despite intensive digitalis administration. The blood pressure gradually fell to 118 systolic, 26 diastolic. An x-ray film of the chest (fig. 1 *A*) showed massive enlargement of the heart shadow; the left border extended to the chest wall, the right beyond the midclavicular line. Rapid improvement followed. A week later a loud pericardial rub was present over the entire precordium and this slowly disappeared during the next month. The size of the heart gradually diminished (fig. 1 *B*) and the patient went on to complete recovery. The cardiac rhythm became regular but the systolic-diastolic murmur remained.

The electrocardiogram taken on the first day and for some time thereafter revealed auricular fibrillation, left ventricular preponderance, slurring and low voltage of the QRS group, with occasional ventricular premature beats (extrasystoles). The T waves were inverted in leads I and II. A record about ten days later revealed restoration of regular sinus rhythm.

CASE 2.—An obese American woman, aged 57, whose past history was not remarkable, admitted March 8, 1934, and discharged April 3, 1934, was seized with sharp pain over the left chest anteriorly while hurrying up a flight of stairs. She was forced to rest because her chest seemed to be tied in a knot. After several minutes the pain was replaced by soreness, except when she bent forward, at which time she experienced pain over the precordium radiating upward to the neck. Two days later she became nauseated and vomited; she felt weak and chilly. During the next few days the substernal pain persisted. In addition, there was pain in the left axilla and about the scapula, especially on breathing. On admission the patient was acutely ill and moderately dyspneic. The temperature was 102 F., the pulse 120 beats per minute, the blood pressure 128 systolic, 72 diastolic. Over the left lower lobe were dulness, distant bronchial breathing and voice, and moist râles. There was a gallop rhythm at the cardiac apex. The white blood count was 8,900, with polymorphonuclears 76 per cent. The basal metabolism was normal. The admission diagnosis was pneumonia, possibly associated with acute coronary occlusion. However, an x-ray film of the chest (fig. 2*A*) showed distinct enlargement of the heart shadow to the left, which raised the suspicion of pericarditis with effusion. This was confirmed by the appearance of a friction rub to the left of the sternum on the second day after admission. After two days this could no longer be heard and a week later the chest film (fig. 2 *B*)

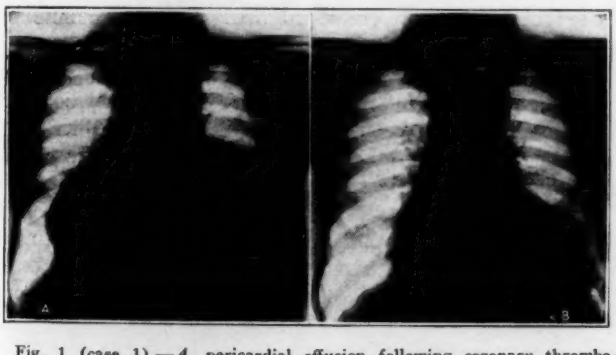


Fig. 1 (case 1).—*A*, pericardial effusion following coronary thrombosis, Sept. 27, 1933. *B*, disappearance of pericardial effusion, Nov. 3, 1933.

revealed the heart to be of normal size. During this time the temperature had fallen rapidly and the general condition of the patient had improved. The blood pressure had fallen to 98 systolic, 64 diastolic. At no time was digitalis administered. Except for occasional pain in the chest the patient convalesced uneventfully. The cardiac sounds assumed a good quality. At fluoroscopy before discharge, no abnormality was observed in the heart or lungs.

The patient was seen again three and a half months later. She complained of precordial pressure following effort, and shortness of breath on slight exertion. She was unable to climb stairs at all. Clinically and roentgenographically there was no evidence of cardiac or pulmonary disease. The blood pressure was 128 systolic, 80 diastolic.

An electrocardiogram taken the day following admission showed normal sinus rhythm, with a rate about 105 per minute. Left ventricular preponderance was present. The voltage of the QRS waves was low. The record on March 25, 1934, disclosed inverted T waves in leads II and III. In a few days the T waves had practically become upright.

COMMENT

The evidence in both cases appears fairly conclusive that the pericardial effusion was due to an acute coronary artery occlusion. In the first case an acute illness was present in a man of 60, with a previous history of

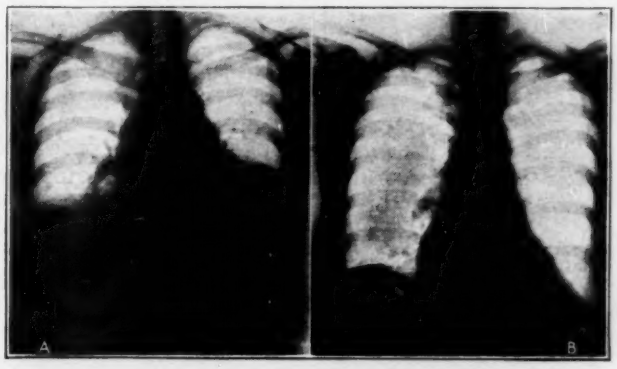


Fig. 2 (case 2).—*A*, pericardial effusion following coronary thrombosis, March 9, 1934. *B*, disappearance of pericardial effusion, March 15, 1934.

syphilis but no story or evidence of rheumatic fever or rheumatic heart disease. There was also no reason to consider the diagnosis of tuberculosis. On the other hand, the history was typical of coronary artery thrombosis in a patient with arterial hypertension. The x-ray film and pericardial rub were proof of a pericarditis with effusion.

In the second case, the woman, aged 57, the question arose during her hospital stay whether or not the lung signs were those of pneumonia, and hence whether the pericarditis with effusion was a complication of the pneumonia. Pain over the chest, even in the precordial region, may be present in a patient suffering from pneumonia. Clinically, however, the patient's course was not that of pneumonia. In fact, a pericardial effusion in a pneumonia [6] patient is commonly associated with an empyema; the patient's condition is grave and the outcome is usually fatal. Our patient never presented such a picture. Further proof that coronary artery disease was the basis of her trouble was observed June 21, 1934, when she returned to the hospital for reexamination. She complained of precordial pressure following the slightest physical exertion. The electrocardiogram corroborated the diagnosis, for it still showed evidence of myocardial damage.

It may be thought that instead of a pericardial effusion a hemopericardium [7] occurred in our cases. This is hard to disprove completely, as the patients survived and paracentesis was not performed during life. However, the course in hemopericardium is usually rapid and fatal.

SUMMARY

Pericardial effusion may follow an acute coronary artery occlusion. In two cases reported, both patients recovered.

6. Stone, W. J.: Pericarditis as a Complication in Pneumonia, Based on Three Hundred Necropsies, J. A. M. A. **73**: 254 (July 26) 1919.
7. Olcott, C. T.: Rupture of a Coronary Artery, Hemopericardium, New England J. Med. **204**: 760 (April 9) 1931.

In a patient suffering from an acute coronary thrombosis, a large area of cardiac dulness should arouse the suspicion of a pericardial effusion, particularly when a pericardial friction rub accompanies this enlarged heart.

The diagnosis of coronary thrombosis with pericardial effusion will be made more frequently if roentgenograms are taken.

125 East Seventy-Second Street.

REPAIR OF BLADDER FISTULAS

CLOSURE IN SEVENTEEN CONSECUTIVE CASES

EDGAR F. SCHMITZ, M.D.
ST. LOUIS

This paper contains a report of seventeen consecutive cases of bladder fistula successfully closed, together with a discussion of their causative factors, types of injuries sustained and the principles of operative procedure employed.

The following cases were encountered:

One vesico-uterine (fundus).
Two vesicocervical.
One vesico-urethrovaginal.
Three large vesicovaginal, the opening being larger than a half dollar (30 mm.).
Nine small vesicovaginal (quill to finger size).
One anterior vesical injury (fistula under the symphysis pubis).

Grouping them according to causative factors discloses the disturbing fact that practically all these injuries were sustained by direct trauma, of a more or less preventable character. They may be classified as follows:

Eight fistulas following hysterectomies.
One following criminal abortion.
One after a cervical amputation.
One following cystocele repair.
Five due to obstetric manipulation.
One following radium for carcinoma of the cervix.

These various injuries merit discussion, for after critical examination only two cases can be unequivocally classed as excusable because of the nature of the trauma sustained. One of these involved the delivery of a double monster, in which a cervical injury resulted; the other was a slough following the application of radium to a large cancer. This leaves a residuum of fifteen holes in the bladder that should have been prevented by proper surgical technic. Grouping these fifteen cases reveals that, of the eight fistulas following hysterectomies, four were predicated on a mistaken diagnosis, the uterus having been removed for cancer where no malignant process was found. All eight sustained direct violence to the bladder wall, as urine appeared in the vagina within twenty-four hours following the operation. The criminal abortion fistula was produced by scraping away a portion of the anterior uterine wall with a sharp curet and piercing the bladder with the same instrument. In the cervical amputation and cystocele repair cases the injury was obviously sustained while an attempt was being made to free the bladder from the cervix.

The four remaining obstetric cases included gross negligence by a midwife who deserted a case of breech presentation when she could not deliver the aftercoming head, and lack of judgment on the part of the physician, who some hours later extracted the dead baby too forcibly for the already badly damaged tissue. The resulting injury left a defect at the base of the bladder through which four fingers could be easily passed. The second obstetric injury was sustained by attempting to pierce the head of a hydrocephalic infant and pushing the scissors through into the bladder cavity. A third childbirth injury was the faulty application of forceps to the head of an unusually large baby and the use of the pubic bones as a fulcrum for a prying extraction. The result was a dead child, separation of the symphysis pubis, a tear into the bladder under the symphysis, and a third degree laceration. The fourth obstetric case again involved the faulty use of forceps, this time tearing out the base of the bladder at the site of the sphincter muscle and stripping away the upper third of the urethra.

While the obstetric cases are no doubt more dramatic in their recital, they comprise the smaller number of fistulas produced and give no more terrifying symptoms to the patient than the prosaically chronicled injuries sustained at operation. Such a recital of facts (fifteen of seventeen cases could be classed as preventable injuries) is not a pleasant task. Admitting that in every operative field accidents will occasionally happen, still the number of failures in this series seems unduly large. Yet these failures form the basis of my paper, for without the trauma there would be no fistula.

Viewing the cases from the standpoint of operative difficulties encountered, I found that the eight fistulas following hysterectomy were all small openings, as might have been expected. These fistulas were complicated mainly by two factors: the nearness of the hole to the ureters, or the inaccessibility of the traumatized area owing to its being pulled high into the vaginal vault by the scar of the fixation. The three large fistulas, regardless of cause, were all low in the bladder, showed marked tendency to incrustation and retraction, and were difficult to close mainly from the standpoint of freeing enough tissue to bring about free mobilization of the structures to be sutured.

The remaining six cases, each in its own peculiar way, brought about problems of closure that cannot be fitted into any one descriptive picture. The general principles of repair about to be mentioned, however, apply in this group as well as the others. In dealing with the entire fistula problem it must be remembered that each operator must bring to his case some modicum of ingenuity and dexterity in the matter of technic, for on these factors the successful outcome in special cases largely depends.

The prevention of fistulas is perhaps not strictly a part of a paper of this character, but in view of the fact that all these cases are traumatic in origin it might not be amiss to suggest that a disposition to proceed with care when the field of operation is not clearly defined will obviate practically all these unfortunate accidents. Should a hole inadvertently be made in the vesical wall, an immediate painstaking repair will almost certainly close the defect.

METHOD OF CLOSURE

Turning now to the problem of closure, certain basic facts must be established and certain procedures carried out before any operation can be undertaken. First and foremost in this matter is the qualification of the surgeon to carry to his case the necessary patience and

training so obviously needed in this type of work. One of the greatest causes of failure in fistula operations must be attributed to a lack of understanding of the problems involved by the person who first attempts to close the opening. The percentage of bad results mounts rapidly after each attempted closure. Undue haste in operating and a lack of willingness to work out slowly and painstakingly each bit of tissue needed contribute to failure.

The time to close a fistula is at the first sitting, and all vanity and professional squeamishness should be set aside to the end that a case of this kind may get into proper hands from the very beginning and not after an unsuccessful attempt to close has seriously jeopardized the patient's chances for a prompt and complete recovery. A few figures from my series will illustrate this point. Thirteen of seventeen fistulas were closed by one operation. Of these thirteen cases, no previous attempts at closure had been made in ten. Two patients had been unsuccessfully operated on once before and one patient twice. Thus by far the largest number of fistulas closed at one sitting had not previously been subjected to harmful tissue trauma.

Of the four remaining cases, it took two operations to close the fistula in two, although no procedure had antedated my attempted and then final closure, and two patients had more than one operation before coming under my care and each took two sittings before closure was accomplished. To recapitulate, thirteen cases in my hands were primary closures and two operations each were needed in four to seal the opening. The inference is then clear that the surgeon who has the opportunity to officiate at the first repair operation is in the most strategic position to close the defect.

Certain points in the preparation of any case of vesical fistula are so axiomatic that they need not be elaborated on here. Suffice it to say that all ulcerated areas in the genital canal must of necessity be healed before any operative procedure is resorted to, that calcareous deposits should be removed as nearly as possible and that bladder infection should be reduced to a minimum.

The services of a competent urologist are indispensable in the type of work under discussion, for not only must the location of the opening in the bladder be accurately located by cystoscopic examination but its relation to the ureters and the patency of these structures should be ascertained. It is all important to know as much or more of what the intravesical picture shows as it is to locate the external opening properly. No blind operation should ever be attempted.

Having located the opening externally and internally and having carefully planned the procedure, one is now in a position to operate. Again I stress the factor of time. If one must hurry, one should not start. Haste causes failure. In all of my cases with one exception, closure was done from below. The vaginal route for those accustomed to gynecologic procedure is the safest mode of approach, for it not only enables one to free the vaginal scar completely but also permits of wide dissection, which in the end secures a firmer closure and restores the supporting structures to approximately their normal relations. In only one case was it necessary to resort to a paravaginal or so-called Schuckhardt incision. With proper retractors, even high fistulas can usually be satisfactorily reached without creating an additional wound in the pelvic floor.

The secret of success in the closure of vesical fistulas is undoubtedly dependent on many factors, but one or two points have shown themselves to be very much worth while if any uniformly satisfactory results are to be obtained. The first of these is not to freshen the edges of the defect. In most textbooks dealing with fistulas the suggestion is made that after the tract is freed the hard, firm edges of the opening should be carefully cut away. If I were to put only one don't in this paper I should apply it here. Don't cut anything away. Don't sacrifice the least bit of bladder wall. All the tissue is needed that one can get. Free the edges and turn them in, bring the raw surfaces together as near the free margin as possible, but don't cut any portion of the bladder away. By saving all tissue, if a failure should result, the opening will not be any bigger than the original defect and the patient will be no worse off in that respect than before operation. If one freshens the edges, the hole is made larger; and should there be failure to close, any operative procedure that follows will be made just that much harder if not impossible. I fear that many failures can be chalked down to this error of technic, for as operation follows operation in bad cases the opening continues to enlarge, which surely is the worst possible outcome for the patient.

My second point is a plea for free and wide dissection of all possible surrounding tissue. If one wishes to succeed in closures, suturing must be made not only possible but practical. No suture will hold in soft tissue under tension, and the only way to avoid tension is to mobilize structures. To attempt a closure of a fistulous tract with the slightest tension on the suture line because of inadequate preliminary dissection is to court disaster from the start. There must be sufficient bladder wall available not only to allow a closure of the opening but also to permit the placing of one or two rows of supporting sutures. To accomplish this necessitates a thorough understanding of the problem in hand and a willingness to free tissue in all directions. Only by carrying out a well planned and systematic dissection can one mobilize sufficient vesical wall to close the larger or more inaccessible bladder fistulas.

The manner of placing sutures is important in two ways. A pucker should never be caused. If tissue buckles, surface adaptation is interfered with and the results are jeopardized. If working near the ureters, one should place the suture so that it follows the long axis of the tube and does not cross it. In this way if one should get too close to the lumen not as much harm will result. A nonabsorbable suture should never be used in the bladder. If the catgut does not hold, it is almost surely a fault in the operative technic and not the suture material that should carry the blame. In my work I prefer an extra hard fine gut, such as is used for intestinal suturing, and find it very satisfactory. Another important point in the suturing of these wounds is the obliteration of all dead spaces. One must suture the deeper to the more superficial structures or pockets will develop, which may undo the best operative procedure.

AFTER-TREATMENT

After the incision has been closed in a satisfactory manner, several additional points in technic are necessary before everything has been done for the patient that makes for success and minimizes failure. An iodoform pack is placed in the vagina along the suture line. This to a degree prevents oozing and aids in holding

the raw surfaces to one another. It has the additional advantage of reducing the bacterial flora to a minimum during the early postoperative period. It should, however, be removed at the end of twenty-four hours, as it may otherwise cause irritation. A catheter is always introduced into the bladder at the end of the operation and fixed there. In all my cases I have sewed this catheter into position by means of a bit of silkworm gut passed through the small labia near the urethra. This serves a double purpose. It not only fixes the catheter but keeps the patient quiet and thus the catheter from moving. If the body is moved it causes pain, so that these patients remain relatively quiet in one position for several days, which accomplishes much. I never use a so-called mushroom catheter but always a straight one, as it can be removed more easily and works just as well. The catheter is allowed to remain in the bladder for at least a week, preferably ten days, although it may be necessary to clip the stitches that hold it fast before this time and substitute taping.

Posture is so important a part of the after-treatment in these cases that a word about it should be said here. One must try to drain away as much urine from the suture line as possible, not as was formerly suggested to keep the bladder incision dry but to prevent even the very slightest pressure on the repaired area. If there is only a tiny bit of constant fluid pressure, seepage may occur. To obviate this, one should make the most dependent portion of the bladder that area farthest away from the suture line. In other words, in all posterior fistulas, and this means practically all of them, the patient should be placed flat on the abdomen, with the head of the bed slightly elevated. This position must be maintained for at least five days, no matter how uncomfortable the patient may be. After this a little lying on the side and gradual turning to the back is allowed, but a minimum of five days of abdominal position is in my opinion essential in all posterior fistulas.

NURSING CARE

Lastly, the nursing care of these patients must be not only good but perfect. The drip of the catheter must be under constant observation so that no possible backing up of urine can occur as the result of blockage. Back pressure is fatal to the result. The catheter itself is run down between the patient's legs and out at the foot end of the bed, never over the side. I do this because I want the urine to fall gradually by gravity to the bottle and not by any chance be forced to flow over even a slight elevation. The tube is protected by sand bags, so that the lower limbs have no chance to compress the lumen. It is irrigated once or twice daily with boric acid solution, which serves the double purpose of keeping the catheter clean and allaying vesical irritation.

CONCLUSION

The technic I have outlined has given me good results and I trust may prove useful to others. From what has been said it will be seen that success in the closure of bladder fistulas is dependent on a multiplicity of detail, every step of which must be painstakingly carried out. Even with the best technic a certain number of failures will no doubt be recorded, but it should be the aim of the operator to plan an approach to this problem in such a way that the tragedy of persistent failure will be rare indeed.

501 Metropolitan Building.

OTOSCLEROSIS IN IDENTICAL TWINS

GEORGE E. SHAMBAUGH JR., M.D.
CHICAGO

Otosclerosis is the most important cause for severe deafness coming on in early or middle adult life. The pathology, the clinical picture, the diagnosis and the prognosis of the disease and its relative frequency were accurately described by Bezold, who in 1885 was the first to show that the characteristic clinical picture is due to bony ankylosis of the stapes. The acceptance of these facts, however, particularly concerning the frequency of otosclerosis, has been slow, especially in this country where histologic examination of temporal bones was until recently limited to a very few investigators. Seeing is believing; and, as the microscopic study of temporal bones is being carried out more extensively and in more places, the accuracy of the observations of Bezold, Siebenmann and others that otosclerosis is a very common disease is beginning to be appreciated.

Knowledge of the etiology of this very important cause for progressive deafness has advanced but little since Bezold's time. The strong hereditary tendency has from the first suggested that the foci of spongification in the bony capsule of the labyrinth are the result of an inherited anlage, and this view has been enhanced by the recent finding of a characteristic focus of otosclerosis before birth. That the occurrence of otosclerosis invariably follows mendelian laws has not been satisfactorily established, but the hereditary tendency is so striking that one may be justified in assuming that the hereditary factor is necessary for the development of otosclerosis.

The question at once arises, May there not be other extrinsic factors within our control which favor and accelerate the development of this inherited lesion? Pregnancy is just such a factor, which in a certain proportion of women with otosclerosis acts apparently as an activator or accelerator of the lesion. That there may be other external factors is suggested by the fact that the progress of deafness in a given case of otosclerosis is not even and regular but is marked by periods of activity when the hearing decreases comparatively rapidly, and periods of quiescence when the hearing may remain practically stationary for years. The discovery of these factors is extremely important but extremely difficult, owing to the essential slowness of the development of the process, in which many years may elapse between beginning and complete ankylosis of the stapes. Search for possible endocrine imbalance, disturbances in mineral metabolism or dietary deficiency has thus far been negative. Histologic study, while confirming the view that otosclerotic foci have periods of activity and periods of quiescence, has failed to give a clue to the factors causing these periods of activity.

As I [1] pointed out in 1933, otosclerosis occurring in identical twins affords a unique opportunity to study this disease. The hereditary factor in each of a pair of identical twins is exactly equal, so that if otosclerosis develops unequally or develops in one and fails to develop in the other there presumably is some extrinsic or nonhereditary factor responsible for this difference, and by carefully examining the histories of each twin one may be able to uncover the extrinsic

1. Shambaugh, G. E., Jr.: Progressive Deafness in Identical Twins, Arch. Otol. **17**: 179 (Feb.) 1933.

etiologic factor present in the one and absent in the other. On the other hand, if otosclerosis always develops simultaneously and runs an identical course in identical twins, irrespective of differences in their environment, general health and illnesses, then it must be concluded that heredity is the sole etiologic factor in the development and progress of a case of otosclerosis.

The first report of otosclerosis in identical twins appeared in 1932 in the German literature.[2] The case report was briefly as follows: Two brothers, identical twins, aged 39 years, had experienced very different upbringings. One went abroad as a merchant in his early youth, the other studied and settled down in a small town in middle Germany as a dentist. At the age of 36 both became aware of increasing deafness and tinnitus. The difficulty in hearing increased gradually and symmetrically in both ears. At the time of examination three years later both suffered from a severe deafness. This was found to be due to otosclerosis with primary stapes fixation. The hearing curves of both brothers corresponded almost exactly. In this instance, although the living conditions, climatic influences, environment and occupations were basically different, the development of otosclerosis ran an identical course in the two. The author concludes on the basis of this one observation that the hereditary anlage is the essential and controlling influence in the development of otosclerosis compared to which the outside influences are of subordinate significance.

The second case of otosclerosis in identical twins was reported by Frank H. Rodin[3] in 1933. The history was as follows: Two identical twin sisters, aged 15 years, had grown up together and had had the same illnesses at the same time (scarlet fever and whooping cough). At the age of 6 the hearing of both began to decrease gradually until about three years before the examination, when it had become stationary and had not changed since then. Examination revealed essentially normal drum membranes with the tuning fork reactions of conduction deafness and a practically identical hearing defect in the two twins. In this set of identical twins the defect also ran an identical course but, unlike the first set, here the environment, illnesses and general health were also identical, so one cannot conclude that different outside factors might not have altered the course of the disease.

To these two instances of otosclerosis in identical twins I can now add three more, which I have had the opportunity of examining the past year.

1. The first set of identical twins I encountered in an examination of the members of the Washington, D. C., League for the Hard of Hearing, carried out in May 1933. Nora and Elizabeth, aged 41, were so much alike in every respect as children that their friends, their teachers and even their father had great difficulty in telling them apart (fig. 1). They were the eldest of five children, all daughters. They gave a very unusual family history of deafness in that both parents, all five daughters, and a maternal aunt suffered from progressive deafness. Fortunately I was able to examine the one living parent and two of the daughters in addition to the twins. The results of these examinations were briefly as follows:

The mother of the twins began to notice gradual loss of hearing soon after the age of 8 and this had been progressive, especially the last twenty years. She was profoundly deaf at 68, at the time of examination, with a negative Rinne test in both ears and prolonged bone conduction. Both drum membranes were entirely normal except for a slight loss of luster on one side. The diagnosis was otosclerosis with primary stapes fixation.

The youngest daughter began to notice very gradual loss of hearing at the age of 17, and this has progressed especially the past four years, so that at the age of 29, at my examination, there was a moderate defect in hearing with more impairment of the low tones than of the high tones, with a negative Rinne test in both ears, and with prolonged bone conduction. Both drum membranes showed moderate thickening, and one of them showed diminution of luster but no retraction. The diagnosis of otosclerosis was made in spite of the drum membrane changes because of the progressive nature and insidious onset of the defect, without attacks of acute tubal occlusion and not benefited by inflations of the ears.

The other daughter whom I examined had noticed some difficulty in hearing as long as she could remember, but for the past fifteen years this had been progressive. At the age of 37 she was moderately deaf with elevation of the lower tone limit, prolonged bone conduction and negative Rinne test. Both drum membranes were quite normal, with a distinct pink glow from the right promontory. The diagnosis was otosclerosis.

Fig. 1.—Nora and Elizabeth at the age of 5 years.

The third daughter was not examined but also suffered from progressive deafness. The father died at the age of 58 only slightly deaf, but his trouble had begun insidiously in the forties and had been progressive. A maternal aunt was moderately deaf at the age of 58 and used an earphone. Presumably these three people also had otosclerosis, but without an examination one cannot be certain of this.

The twins, Nora and Elizabeth, aged 41, were the eldest of the five daughters. The twins grew up together, shared the same room, enjoyed equally good health, and had the same illnesses (measles, mumps and whooping cough) at the same time. At the age of 14 both had measles, and following this illness Nora noticed a slight defect in hearing which her twin sister Elizabeth did not have. Nora's defect gradually increased, especially over a period of six months at the age of 30, so that she was very much deafer at 41, at the time of examination, than her sister. Elizabeth first began to notice a slight impairment in hearing in one ear (the left) at the age of 30 and this had increased slightly, while the hearing in the right ear had remained apparently normal.

2. Albrecht, W.: Ztschr. f. Hals-, Nasen- und Ohrenh. **29**: 55-60, 1932.

3. Rodin, F. H.: Identical Hearing Defect in Identical Twins, Arch. Otol. **17**: 179 (Feb.) 1933.

Examination revealed no abnormality of the nose, throat or sinuses of either twin. Both drum membranes of both twins were normal, but in Nora's case a distinct pinkish glow from the region of the promontory was visible. Both had had their tonsils removed, and the tonsil fossae were free from lymphoid tissue. Nora showed a marked defect in hearing, being unable to hear the whispered voice in either ear and unable to hear any of the low-pitched forks up to and including c (128 double

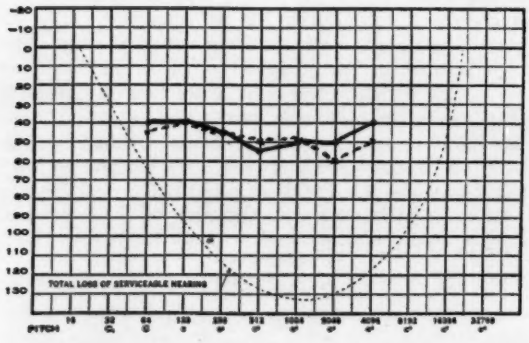


Fig. 2.—Audiogram of Hester's hearing: solid line, right ear; broken line, left ear.

vibrations). The Rinne test was negative, the bone conduction prolonged. The diagnosis was otosclerosis with stapes fixation. Elizabeth showed a moderate defect in the left ear, whisper being heard only close to the ear while in the right ear whisper was heard at 6 feet. She was unable to hear the C_1 fork (32 double vibrations) in the left ear, and this was moderately shortened in the right ear while the C fork (64 double vibrations) was scarcely heard in the left ear and only slightly shortened in the right. Bone conduction was prolonged, and the Rinne test was negative in the left, shortened positive in the right. The diagnosis was otosclerosis with beginning stapes fixation.

There should be no dispute as to this diagnosis, even by those who are unwilling to make a diagnosis of otosclerosis without a family history, for both parents and all the siblings suffered from progressive deafness.

Here, then, is a pair of identical twins both suffering from classical otosclerosis, in whom the onset and development of the hearing defect were not identical but strikingly different. In the one the loss of hearing began at 14 and at 41 is quite marked in both ears, while in the other the onset of deafness was at 30, and at 41 there is a moderate defect in one ear but only a slight beginning defect in the other ear. What factors present in one twin and absent in the other might be responsible for this difference?

The environment was the same for the two until the age of 33, when Elizabeth married; but by this time there was already a marked difference in the hearing. The menstrual histories were identical and there were no pregnancies. Nora (with the poorer hearing) had always had excellent teeth, while her sister, Elizabeth, had had numerous fillings and had developed pyorrhea. This suggests a difference in calcium and phosphorus metabolism, but the one with the evidence of deficiency was the one with the better hearing. The one definite and striking difference in health between the twins was in the tendency to head colds. Nora had always been subject to very frequent and very severe head colds until the age of 33, when she had pneumonia. Since then her colds had been infrequent and mild. Moreover, these colds were particularly severe and frequent at the age of 30, when her deafness had been most rapidly progressive, while during the past eight years, with very few colds, her deafness had increased but little. Contrasted to Nora's history of frequent, severe head colds, Elizabeth had never been subject to colds. Both sisters noticed that during head colds their hearing was temporarily worse.

From this single observation it appears that frequent head colds have an accelerating or activating effect on otosclerotic foci already present as the result of a hereditary anlage.

2. The second set of identical twins were sisters, aged 52. The family history of deafness was negative except for a paternal uncle, who was quite deaf at 35, and his son, who had progressive deafness beginning at the age of 20.

The twins, Antoinette and Hester, grew up together in the same environment and had measles, whooping cough and chickenpox at the same time as children. Both were married, but Antoinette was never pregnant while Hester had one child at the age of 33. At the age of 40 Antoinette began to notice gradual loss of hearing with tinnitus. The defect was progressive and not altered by inflations. At the age of 45 Hester first noticed the gradual onset of progressive deafness, soon after the menopause. Her defect had progressed more rapidly than her sister's, so that at 52, at the time of the examination, she was the deafer of the two.

Examination revealed the nose and nasopharynx normal in both. Antoinette had had her tonsils removed seven years before. Hester still had her tonsils, which showed only slight evidence of chronic tonsillitis, consisting of slight injection and slight enlargement. The drum membranes were normal in Hester except for very slight scarring in one ear, while Antoinette's drum membranes were both slightly scarred but otherwise normal, with a suggestion of a pinkish glow from the promontories.

Hester, the deafer of the pair, heard the whispered voice close to the left ear, not at all on the right. The C_1 fork (32 double vibrations) was not heard in either ear; the C fork (64 double vibrations) was much shortened in the right ear and not heard in the left. The Rinne test was negative in both ears and bone conduction was prolonged (fig. 2).

Antoinette heard the whispered voice at 3 feet in the right ear, not at all in the left. The C_1 fork (32 double vibrations) was not heard in either ear; the C fork (64 double vibrations) was moderately shortened in the right ear and not heard in the left. The Rinne test was negative in both ears and bone conduction was prolonged (fig. 3).

The diagnosis was otosclerosis with stapes fixation in both twins. In the one the defect came on five years earlier than in the other but had not progressed as rapidly, so that twelve years later the degree of deafness was similar in the two.

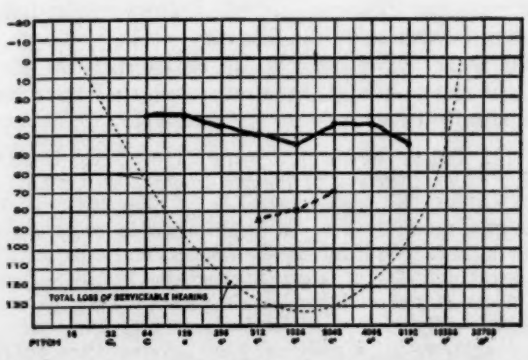


Fig. 3.—Audiogram of Antoinette's hearing: solid line, right ear; broken line, left ear. The hearing curves are distinctly different from this patient's twin sister.

What differences can be found in their histories to account for this difference in the development of deafness? Both twins had always enjoyed excellent health. Their menstrual histories were similar except that the menopause came on at 42 in Antoinette compared to 45 in Hester, while Antoinette had never been pregnant and Hester had had one child at 33. Antoinette, the first to lose her hearing, had always been subject to

severe, frequent head colds two or three times a year, while Hester had never had more than one mild head cold a year, lasting only a few days. Both had been subject to sore throats and tonsillitis when younger, but only Antoinette had had her tonsils removed, seven years before. Both noticed that the hearing was temporarily worse with head colds or sore throats.

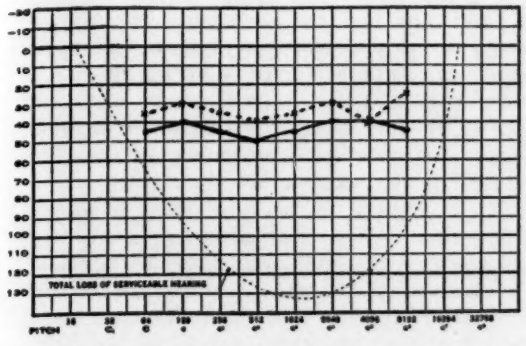


Fig. 4.—Audiogram of Sylvia's hearing: solid line, right ear; broken line, left ear.

In this set of identical twins with otosclerosis the difference in the onset and development of deafness is not very striking, but the earlier onset of deafness in Antoinette corresponds to her frequent severe head colds. Both twins gave a history of tonsil infections in childhood and early adult life but only Antoinette had had her tonsils removed. Might the slower progress of her defect be the result of the tonsillectomy, so that in spite of the earlier onset she now has the better hearing? Since the difference in these twins was not marked, one can only say that the evidence in this case is suggestive that more frequent head colds led to the earlier appearance of deafness in one.

3. The third set of identical twins were sisters, aged 25. There was no family history of deafness. Sylvia and Lillian grew up together and both had measles, whooping cough and chickenpox, and both had their tonsils removed as small children. Sylvia first began to notice difficulty in hearing at the age of 17 and this had gradually progressed until at 25, at the time of the examination, she could hear a whisper only at 6 inches in both ears. The C_1 (32 double vibrations) and C (64 double vibrations) forks were not heard in either ear, the Rinne test was negative and bone conduction was prolonged (fig. 4). The left drum membrane was entirely normal; the right was normal except for slightly diminished luster. A pinkish glow was visible from the right promontory. The diagnosis was otosclerosis with stapes fixation.

Lillian did not begin to lose her hearing until 22, but during the past six months, since she became pregnant, this had become considerably worse, so that at the time of examination she could hear a whisper only close to the left ear and at 1 foot from the right ear. The C_1 and C (32 and 64 double vibrations) forks were not heard in either ear, the Rinne test was negative in both ears and bone conduction was prolonged (fig. 5). The right drum membrane was normal, with a slight pinkish glow from the promontory; the left drum membrane was normal except for slight thickening and slight loss of luster. The diagnosis was otosclerosis.

Searching for a possible etiologic factor responsible for the earlier onset of deafness in Sylvia, one finds that she had never been as strong as her twin sister and she had always been underweight and particularly susceptible to frequent, severe head colds and sore throats until the past two years, when she has been stronger, has gained weight and has had only one mild head cold each year. Her hearing was always much worse during a head cold. Lillian had never been subject to colds and when she did have a cold it was mild. She was married at about the time she first began to notice defective hearing, two and a half years ago. She was six months pregnant at the time of examination and since the second month of this pregnancy the hearing had decreased rapidly.

In this third set of identical twins with otosclerosis there was a definite difference in the age of onset of the clinical symptoms. Again there was a marked difference in the susceptibility to head colds, the one who is having many colds becoming deaf first. This further confirms the observation that head colds may constitute an extrinsic, controllable factor having an accelerating effect on otosclerosis. It is very interesting that the other previously known extrinsic factor, namely, pregnancy, served to accelerate the defect in the twin who did not have head colds, so that her hearing is now as bad as her sister's.

COMMENT

If the premise were strictly correct that the hereditary anlage is exactly equal in a pair of identical twins, then one could say with assurance that there are external influences which can affect the age of onset and rate of progress of clinical otosclerosis, and this would be saying a great deal. However, there is one disturbing fact that must be taken into account and that is that identical twins develop from the same egg, but from different halves of the egg, and their hereditary environment may differ slightly just as the two halves of any person are slightly different. Thus, otosclerosis often begins first in one ear and may occasionally become very advanced in this ear before the onset of progressive deafness in the opposite ear. The difference in the twins may correspond only to the difference in the two ears of any one with otosclerosis. This detracts considerably from the strength of the conclusions. However, the fact that the lesion developed first, in every instance, in the twin who was much more susceptible to head colds is at least suggestive evidence that head colds are an activating influence on otosclerosis. Moreover, this harmonizes with a clinical observation made many times before, that a large proportion of persons with otosclerosis complain of an increase in

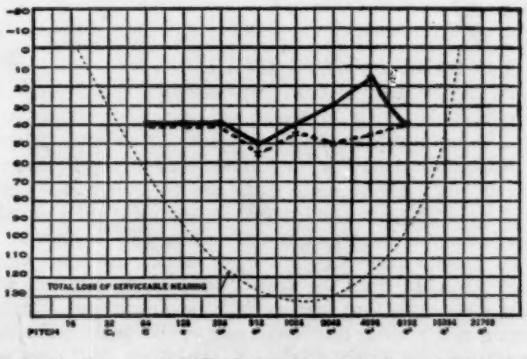


Fig. 5.—Audiogram of Lillian's hearing: solid line, right ear; broken line, left ear. Note difference in hearing curves from this patient's twin sister.

their defect during head colds, though usually this increase is only temporary. In the first set reported, Nora's hearing defect advanced relatively rapidly during a period filled with many severe head colds, while subsequently, with relative freedom from colds, the process became inactive and stationary.

It can be concluded, on the basis of the observations in identical twins, that head colds apparently have an

activating influence on otosclerosis similar to the influence of pregnancy. This conclusion coincides with clinical experience in the majority of patients with otosclerosis. The mechanism of this effect is not known. It does not seem to be due to direct extension of inflammation through the eustachian tubes, though this possibility must be considered. Certainly there has not, in my experience, been a demonstrable acute tubal occlusion or tubal catarrh that could be benefited by local treatments. The effect may be entirely systemic, by blood stream transmission of toxins. Further observation of otosclerosis in identical twins will confirm or refute these conclusions. Meanwhile, one can feel justified in any reasonable measures to reduce the susceptibility to head colds in persons with otosclerosis.

Bezold advised repeated hearing tests every six months on patients with otosclerosis "to ease the mind of the patient who usually suffers from the impression that he perceives progress of the deafness." He further advised reassurances that the disease rarely leads to profound deafness within a few years, but that on the other hand a large number of cases become stationary. "In this manner you have done them much more good than if you try to deceive yourself and them as to their future by a series of attempts at treatment extended over a long time." To Bezold's advice I can add that every reasonable effort should be made to decrease head colds in those persons with otosclerosis who are subject to them.

SUMMARY

Otosclerosis in identical twins offers a unique opportunity to study the etiology of this common disease. This comparatively rare occurrence has been observed a total of five times. Twice the disease ran an identical course in each twin. Twice the disease began five years earlier in the twin who was more susceptible to head colds. Once the deafness began sixteen years earlier in one twin and here the most likely cause for the striking difference was the much greater susceptibility to head colds; and, further, the progress of the deafness in this patient was most rapid at a time when she was having many colds and was much slower when she became less susceptible to colds.

122 South Michigan Avenue.

English Sweating Sickness.—After the battle of Bosworth, in which Henry VII gained the ascendancy in England, there broke out in the ranks of the conquering army a disease that completely put a stop to the procession of the victorious troops. With disbanded soldiers, it was carried into London. The speed of spread can be estimated from the fact that the sickness reached its height in London by September 21, the battle of Bosworth having been fought on August 22. It spread over England rapidly from east to west, carried far and wide by the men scattered from the army. In London it killed, within the first week, two lord mayors and six aldermen. It attacked the young and robust, this being one of the points in which it was similar to the Picardy Sweat, of which we shall have something to say presently. The mortality of this English sweating sickness was such, according to Holinshed, that "scarce one amongst an hundred that sickened did escape with life; for all in manner as soone as the sweate tooke them or in a short time after yeelded up the ghost." The coronation of Henry was postponed. In Oxford, where Thomas Linacre—who later founded the College of Physicians—was then a student, it was so severe that professors and students fled the university, which was closed for six weeks. This first outbreak remained entirely in England, not even spreading to Scotland or Ireland.—Zinsser, Hans: Rats, Lice and History, Boston, Little, Brown & Co., 1935.

STREPTOCOCCIC INFECTION SIMULATING RINGWORM OF THE HANDS AND FEET

JAMES H. MITCHELL, M.D.
CHICAGO

Prior to the appearance of our paper [1] on ringworm of the hands and feet, the acrodermatoses were usually diagnosed in this country as eczema or dysidrosis. Subsequently, as a result of that paper and of the innumerable papers that have appeared in the medical and lay press since then, physicians and laymen alike have become so ringworm conscious that practically all dermatoses of the extremities are classed as mycotic. So sure are the medical men of their diagnoses that neither a microscopic examination nor a culture is considered necessary to establish the diagnosis. Widespread areas of dermatitis of external origin are likewise considered to be mycotic and are treated as such, with resultant irritation and continuation of the dermatitis.

In 1928 I [2] called attention to the necessity of differentiation of mycotic from nonmycotic lesions. A series of cases was reported presenting lesions that suggested, in appearance, the epidermophytoses. No fungus could be demonstrated, however, either with the microscope or with the culture tube. External irritants in some, and staphylococci in others, were thought to be the etiologic factors in these cases. In 1930 Lehmann [3] reported a series of cases of vesicular eruptions on the hands and feet due to various causes. He was convinced that, regardless of the etiology of the lesions, internal disturbances were of prime importance. Last year Andrews, Birkman and Kelly [4] reported a series of fifteen cases of recalcitrant pustular lesions of the palms and soles secondary to focal infection.

Streptococci as a cause of palmar and plantar lesions have not attracted much attention. In 1926 McGlasson [5] reported a series of fifteen recurrent erysipelas cases as a result of streptococcic infection of the legs complicating mycotic infection of the feet. In 1932 Homans,[6] a surgeon, reported a series of five cases of streptococcic lymphangitis and cellulitis secondary to epidermophytosis or "athlete's foot." He makes no mention of microscopic examination for fungi in these cases. Milian and Katchoura [7] report a case of small spored trichophyton infection, which was complicated by a streptococcic lymphangitis and axillary adenopathy. Barber [8] says that "streptococcic fissures between the toes are usually secondary to epidermophytosis. They may cause recurrent attacks of lymphangitis of the feet, ankles and legs, the origin of which is often overlooked." In my own experience this has rarely occurred. I have often wondered why streptococcic infections have not taken place in the ruptured vesicles so commonly encountered in acute epidermophytosis.

Read before the Section on Dermatology and Syphilology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

1. Ormsby, O. S., and Mitchell, J. H.: Ringworm of Hands and Feet, J. A. M. A. **67**: 711 (Sept. 2) 1916.
2. Mitchell, J. H.: Amycotic Dermatoses Simulating Ringworm and Erosio Interdigitalis Blastomycetica, Arch. Dermat. & Syph. **19**: 659 (April) 1929.
3. Lehmann, C. F.: Acute Vesicular Eruptions of the Hands and Feet, Arch. Dermat. & Syph. **21**: 449 (March) 1930.
4. Andrews, G. C.; Birkman, F. W., and Kelly, R. J.: Recalcitrant Pustular Eruptions of the Palms and Soles, Arch. Dermat. & Syph. **29**: 548 (April) 1934.
5. McGlasson, I. L.: Recurrent Erysipelas of the Legs with Dermatitis of the Feet, Arch. Dermat. & Syph. **14**: 679 (Dec.) 1926.
6. Homans, J.: New England J. Med. **206**: 1038 (May 19) 1932.
7. Milian, G.; Katchoura, V., and Gaquière: Bull. Soc. franç. de dermat. et syph. **41**: 419 (March) 1934.
8. Barber, H. W.: Guy's Hosp. Rep. **81**: 92 (Jan.) 1931.

Perhaps Sabouraud [9] has given the reason when he says, in effect, that the streptococcus is never a chance or secondary invader, as is the ubiquitous staphylococcus. If the streptococcus is present, it is there for business and not as an innocent bystander.

In reporting this small group of only five cases I do not wish to become controversial. Some undoubtedly, in looking at the illustrations, will say at once that the lesions are those of impetigo, which, of course, they are.

Fig. 1 (case 1).—Impetiginous erosions on sides of feet. There were vesicular lesions on the soles resembling ringworm vesicles.

My object in calling attention to these cases is to make a plea for the use of the microscope and of the culture tube in order that streptococcic infection, which subsequently may be the cause of death, shall not be mistaken for the relatively harmless epidermophytoses and treated as such.

The etiology of impetigo still seems to be misunderstood in America. Sabouraud [10] says that Unna and Schwenter-Trachsler [11] wrote a book about impetigo without ever having discovered the cause. He says, further, that there is only one impetigo and that that is streptococcic in origin. It is interesting to find that in the latest editions of three English works on dermatology the authors are entirely in accord with the opinion of Sabouraud, whereas in the latest editions of four American works the authors have the erroneous impression that the cause of impetigo may be either the streptococcus or the staphylococcus. Macleod [12] says: "Impetigo contagiosa (Tilbury Fox) is the direct result of the inoculation and presence in the superficial layers of the epidermis of the Streptococcus pyogenes. The organism may be obtained in pure culture from the serum of a superficial vesicle, provided a suitable technic be employed." Roxburgh [13] says: "Impetigo is a streptococcal infection of the superficial layers of the epidermis resulting in the formation of vesicles which rupture readily; the serum, continuing to exude, then dries up into semitranslucent crusts." Walker [14] says: "The disease is caused by streptococcus, and that organism may be obtained in pure culture from the early vesicles in a very large proportion of the cases. In the crusts the staphylococci are abundantly present and streptococci are only occasionally found."

Ormsby,[15] on the other hand, says: "The disease is a pus infection, the result of the transmission to the skin, through the medium of the finger nail, filthy or otherwise, of an infection of streptococci, staphylococci, or both." Sutton [16] says: "Both staphylococci and streptococci have been recovered from the lesions. It is probable that the staphylococcus is the etiologic factor in some cases of the disorder and the streptococcus in others (probably the majority)." Pusey [17] says: "The studies of Crocker, Bockhart, Gilchrist, C. J. White, Corlett and others have established the fact that impetigo may be produced by either the common streptococci or staphylococci. It is most frequently produced by both." Andrews [18] says: "This is a superficial staphylococcus or streptococcus inflammation of the skin characterized by discrete thin-walled vesicles and bullae which rapidly become pustular and dry, forming loosely adherent golden crusts."

The explanation of this confusion as to etiology lies in the fact that, first, the staphylococcus is ubiquitous and a secondary invader, whereas, the streptococcus is neither ubiquitous nor a secondary invader, and, secondly, the staphylococcus invariably overgrows the streptococcus unless, as Macleod [12] says, "a suitable technic be employed." Sabouraud has devised several

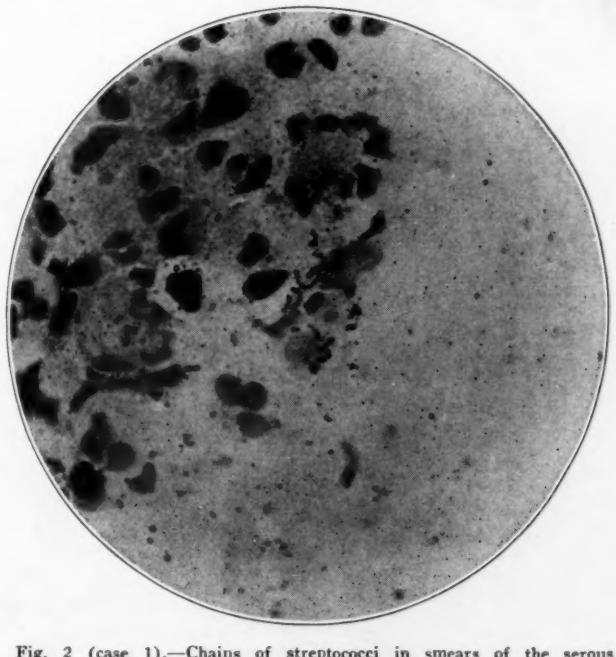


Fig. 2 (case 1).—Chains of streptococci in smears of the serous fluid. (Zeiss 1/12—Homal IV.)

9. Sabouraud, R.: Pyodermites et eczémas, Paris, Masson & Cie, 1928, p. 135: "En soi, les moeurs de streptocoque semblent assez particulières. Dans une lésion polymicrobienne, staphylo et streptocoque, on peut presque assurer d'avance que c'est le streptocoque qui a commencé, car il est difficile de trouver un cas ou le streptocoque soit venu se surajouter au staphylocoque. Le streptocoque n'est vraiment le second d'aucun, alors que le staphlocoque peut être le second de tous. . . . Mais, tout au contraire, dans les cas de parasitisme animal, qu'il s'agisse de gale ou de pédiculose, presque toujours le streptocoque est le premier qui surviendra. L'impétigo scabieux ou pédiculaire revêt alors une physionomie speciale, parce que ses localisations seront celles de l'affection à laquelle il vient s'adjoindre." (The behavior of streptococci appears to be very specific. In a polymicrobic lesion containing both staphylococci and streptococci, one can be fairly certain in advance that it is the streptococcus which has been the primary invader, because it is difficult to find a case in which the streptococcus has been secondary to the staphylococcus. The streptococcus is never really secondary to any other organism, whereas the staphylococcus may be secondary to all. . . . But, on the contrary, in animal parasitism such as scabies or pediculosis, almost always the streptococcus is the first to arrive. Impetigo of scabies or of pediculosis, therefore, presents a special picture because the localizations will be those of the disorders to which it is joined.)

10. Pyodermites et eczémas, p. 116.

11. Unna, P. G., and Schwenter-Trachsler (Frau): Impetigo vulgaris, Monatsh. f. prakt. Dermat. **28**, 1899.

12. Macleod, J. M. H.: Diseases of the Skin, ed. 2, London, H. K. Lewis & Co., Ltd., 1933, p. 297.

13. Roxburgh, A. C.: Common Skin Diseases, London, H. K. Lewis & Co., Ltd., 1932, p. 119.

14. Walker, Norman, and Percival, G. H.: An Introduction to Dermatology, ed. 9, Baltimore, William Wood & Co., 1932, p. 157.

15. Ormsby, O. S.: A Practical Treatise on Diseases of the Skin for the Use of Students and Practitioners, ed. 4, Philadelphia, Lea & Febiger, 1934, p. 322.

16. Sutton, R. L.: Diseases of the Skin, ed. 8, St. Louis, C. V. Mosby Company, 1932, p. 354.

17. Pusey, W. A.: Diseases of the Skin, ed. 4, New York, D. Appleton & Co., 1930, p. 492.

18. Andrews, G. C.: Diseases of the Skin, Philadelphia, W. B. Saunders Company, 1930, p. 524.

methods for the culture of streptococci in the presence of staphylococci. One consists in long strokes of the loop over the agar surface without recharging. At the beginning of the stroke, nothing but staphylococcus will be found to grow, whereas at the other end the delicate streptococcus will have an opportunity to develop. Another method consists in the use of crystal violet as

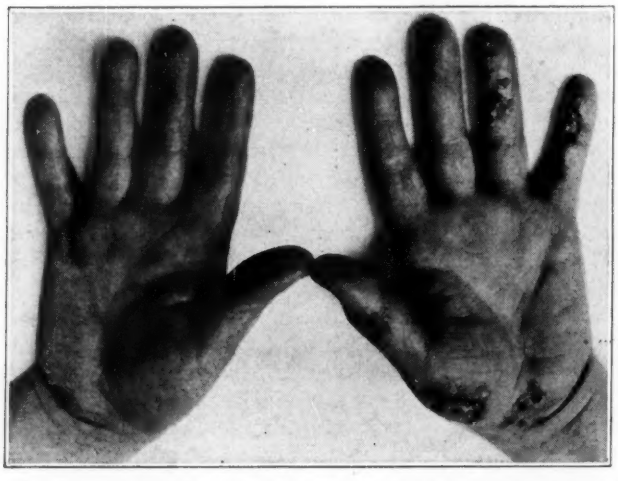


Fig. 3 (case 2).—Impetiginous lesions on the hands. The crusts were preceded by vesicles.

a restraining agent for the staphylococcus. Still another consists in drawing up the serum in a Wright pipet, sealing off and incubating it for seventeen hours. In the tip of the pipet the staphylococcus will not survive the partial anaerobic condition, whereas the streptococcus will, and the first drop from the pipet will be an almost pure culture of streptococcus.

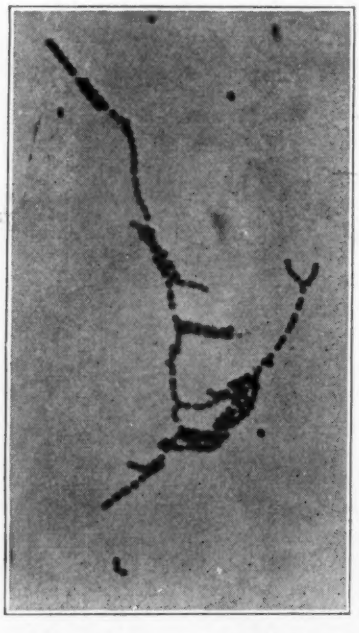


Fig. 4 (case 2).—Original twenty-four hour brain broth culture. (Zeiss 1/12—Homal IV.)

The best demonstration that impetigo is due to the streptococcus consists in the microscopic examination of a stained smear of the clear, thick serum from an unruptured vesicle. Innumerable short chains and diplococci with almost an entire absence of leukocytes will be found. As Walker [14] says, "in the crusts the staphylococci are abundantly present and streptococci are only occasionally found." Even in the crusts, however, the short chains of streptococci can invariably be found. In my own work I have had no difficulty in growing streptococci, when found in the vesicle smear, by means of the brain-broth liquid medium.

The behavior of the staphylococcus as a skin invader is entirely different from that of the streptococcus. The habitat of the former is the hair follicle, where it may always be found waiting in the follicular vestibule, ready to step in at the slightest opportunity, such as that presented by friction or epilation, to exercise its pathogenicity. It is a creamy pus, abscess producer or, if sufficiently virulent, a necrosing core producer. The so-called impetigo of Bockhart is not impetigo but a staphylococcic ostiofolliculitis and is characterized by the formation of a small, superficial lake of creamy pus in the follicular orifice. It frequently coexists with streptococcic impetigo.[19]

The streptococcus, according to Sabouraud, never invades the hair follicle. On the skin it produces a superficial epidermal vesicle, which, before rupture, contains thick, clear, serous fluid, almost free from pus cells but filled with chains of streptococci. As the very superficial vesicle ruptures, the serous fluid continues to be poured out and forms the "stuck-on" crust. Later ecthymatous ulceration may be produced. The organism is an epithelial (impetigo), endothelial (lymphangitis, endocarditis) and mucous membrane ("septic sore throat") pathogen.

The first case to attract my attention occurred in my private practice, May 25, 1933. A matron, aged 19, who had returned several weeks previously from a honeymoon in Bermuda, appeared with lesions on the feet of such severity that she was scarcely able to walk. She had been treated with continuous wet dressings by

Fig. 5 (case 3).—Vesicular lesions on the side and in the fourth interspace of the left foot.

a more than competent dermatologist for three or four weeks for ringworm, with no success. The patient, the dermatologist and the referring physician agreed that the condition was rapidly becoming worse and that other advice should be sought. According to the patient, however, the diagnosis had remained unchanged. When first seen the conspicuous features of the lesions were the superficial character of the vesicles and the subsequent erosions, which were bathed in a profuse, clear, serous fluid. Microscopically, typical chains of streptococci could be seen in all fields. The brain-broth culture disclosed long chains of hemolytic streptococci. Treatment consisting of aqueous solution of corrosive mercuric chloride and ammoniated mercury ointment healed the infection in one week, without recurrence. No fungus could be found.

The next case was that of a woman, aged 37, who was seen, June 12, 1933, with lesions that had been present on the hands for some weeks. These had begun as small vesicles, which were supposed to be mycotic and had been treated as such with no success by the

19. Darier: Précis de dermatologie, Paris, Masson et Cie, 1928, p. 205.

family physician. The older and larger lesions were impetiginous, with small solitary vesicles containing clear, thick, serous fluid. These were grouped, small, superficial vesicles about the fingers of the right hand, but no typical deep-seated vesicles were present. In the smears were found chains of cocci and in the brain-broth cultures hemolytic streptococci. With twice daily baths of corrosive mercuric chloride and ammoniated mercury ointment the hands were healed, as shown in figure 3, taken one week later. No fungus could be found.

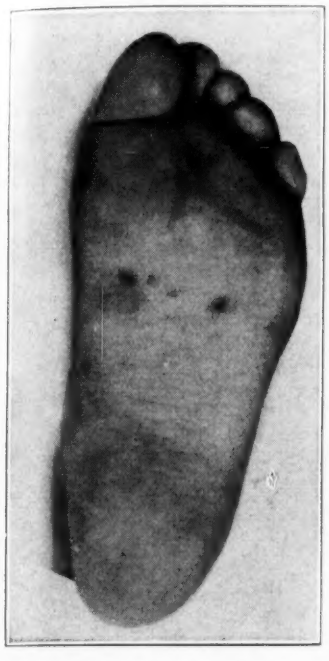


Fig. 6 (case 3).—Vesicular lesions on the sole of the same foot as in figure 5.

After seeing these two cases I began making routine examinations and cultures for streptococci, and on July 24 I found another case, which more closely simulated a fungous infection than any of the four other cases. The patient was a high school girl, aged 15 years, who had been swimming in the lake. The lesions had first appeared several weeks before in the fourth interspace of the left foot. They next appeared on the ball of the foot and lastly on the outer margin of the foot. The microscopic pictures of the smears and of the brain-broth cultures are similar to those of the other cases. Aqueous solution of corrosive mercuric chloride and ammoniated mercury ointment brought about a condition of healing, as shown in figures 5 and 6, taken one week later.

Having seen these three cases I began a constant watch for similar cases, as I was inclined to the belief that I had been overlooking similar cases in the past. Not until April 20, 1934, however, did I find the fourth case of this group. The patient was a college student, aged 21, who lives in a city 400 miles from Chicago. He gave a history of having had dermatitis on the hands more or less continuously for the past year and a half. During that time he had been given three or four roentgen treatments with considerable relief. During the preceding month, however, there had developed severe vesicular and crusted lesions on the hands. Two weeks later, swelling and tenderness developed in the left axilla. There had been much ringworm in the school, and the condition was thought to be mycotic. The patient finally came to the city to consult Dr. Nelson Percy, who in turn referred him to me. At the time of observation there were numerous small superficial vesicles and small yellow crusts. At the base of the dorsum of the right hand was a typical "stuck-on" crust of streptococcic impetigo. The toes were free except for suggestive exfoliation in the right fourth interspace. No fungus could be demonstrated by microscope or by culture. Chains of cocci could be found in all fields with small groups of cocci here and there. The culture contained long chains of hemolytic streptococci slightly contaminated with hemolytic staphylococci. Treatment consisted of corrosive mercuric chloride soaks daily for one week. At the end of that time the condition was practically healed. Owing to the preexisting dermatitis, he was advised to discontinue the mercurial baths and to begin daily baths of potassium permanganate. A letter ten days later reported that the hands were entirely clear.

The fifth patient was a girl, aged 15 years, who had been treated for ringworm of the right palm for several weeks. Despite much attention and constant treatment with "ringworm salve," the condition had continued to grow worse. During the week preceding the consultation, which occurred May 23, 1934, some pain and considerable tenderness in the hand had developed. There was also some tenderness, but no redness, along the ulnar side of the flexor surface of the forearm. There were numerous "stuck-on" serous crusts, which had been removed before the photograph (fig. 10) was made. There were also numerous vesicles, the superficial character of which can be seen on the side of the middle finger. All the vesicles were carefully opened and treatment with corrosive mercuric chloride soaks begun. No fungus could be found. The healing was reported as rapid and uneventful.

SUMMARY

There is a marked tendency to regard all acrodermatoses as ringworm of the extremities.

There is a need for careful laboratory examination of all dermatoses of the hands and feet before arriving at a diagnosis.

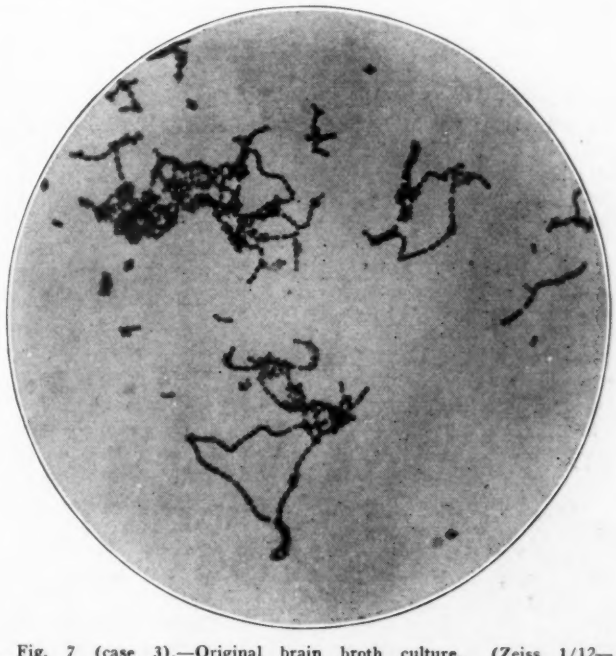


Fig. 7 (case 3).—Original brain broth culture. (Zeiss 1/12—Homal IV.)

I agree with Sabouraud, Macleod, Walker and Roxburgh that impetigo (Tilbury Fox) is due to the streptococcus; this fact can be proved with ease.

A group of five cases of streptococcic infections (impetigo) of the extremities simulated mycotic infection sufficiently to lead to errors in diagnosis.

The infections were found to yield within one week to baths of corrosive mercuric chloride and weak ammoniated mercury ointment.

25 East Washington Street.

ABSTRACT OF DISCUSSION

DR. GEORGE C. ANDREWS, New York: The paper of Dr. Mitchell is valuable because it throws light on a condition that has not been recognized. It also shows the importance of studying bacteriologically unusual and atypical cases and the importance of not classifying them as eczema or pustular psoriasis or dermatophytosis without adequate reason. In my study of pustular eruptions of the hands and feet that resembled pustular psoriasis but were due to tonsillar infections, I ran across a case similar to Dr. Mitchell's. This patient presented pustular and vesicular lesions, mostly pustular, on both palms and soles. There were no lesions between the toes. The cultures and microscopic examinations for fungi were negative. There were no characteristic lesions or any history of psoriasis. The patient said that she had arthritis for six years, and infected tonsils. Her hands and feet had been involved for four years, and the clinical appearance was somewhat like the lesions on the foot in the picture Dr. Mitchell presented, except that they were mostly pustular. Microscopic examinations of cultures from the hands in all instances showed Streptococcus viridans, much to my great surprise. There were three cultures taken and each of the three showed Streptococcus viridans and nothing else. This woman has very large diseased tonsils and she has been told that they should come out. Her reaction to streptococcus toxin vaccine is very strong; in other words, she is apparently allergic to the streptococcus. So far there have been, to my knowledge, about twenty-four cases which clinically resemble pustular psoriasis of the hands and feet with sterile cultures but no other signs of psoriasis, and these patients all had focal infections. Of these, nine have been cured by the removal of the tonsils or the focal infections. I think that there are cases resembling pustular psoriasis which also show streptococci in culture from the lesions on the hands and feet, as well as cases of ringworm.

Fig. 8 (case 4).—Impetiginous lesions on the fingers and right wrist.

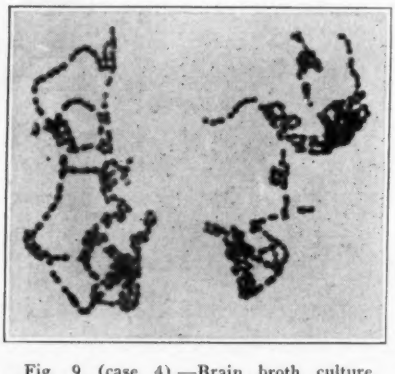


Fig. 9 (case 4).—Brain broth culture. (Zeiss 1/12—Homal IV.)

DR. ERWIN P. ZEISLER, Chicago: I should like to call Dr. Mitchell's attention to the work published four years ago by Jordan of Jadassohn's clinic on the occurrence of streptococci in normal skin. Up to this time a number of observers had reported finding streptococci in approximately 15 per cent of cases from the normal skin. Dr. Jordan reports a series of 150 cases in which cultures were taken of scrapings from the skin with a sterile scalpel from different parts of the body—all normal individuals with no skin lesions and no history of impetigo. Cultures were made on crystal violet bouillon and on ascitic fluid with 1 per cent grape-sugar bouillon. In 148 of 150 cases he reported the positive finding of the streptococcus. I should like to ask Dr. Mitchell how he explains the correlation of these observations with his report here of the streptococcus in these lesions.

DR. MARION B. SULZBERGER, New York: Dr. Mitchell has brought out a point of great importance: that there is a tendency to jump at the diagnosis of dermatophytosis and dermatophytid in all eczematous, vesicular, scaly, crusting hand and foot eruptions. I would not today have made the clinical diagnosis of dermatophytid, as far as one can judge by the appearance in a photograph, in a single one of the cases which Dr. Mitchell has thrown on the screen. The question of whether such cases are primary infections is one that must be decided. This would differentiate them from dermatophytid, in which one does not find the organism as a rule. It is well known that there can be primary infections of the hands and feet with organisms other than fungi. Dr. Zeisler brought up a point that I wish to stress emphatically. I was in Breslau at the time Jordan made these cultures of streptococci. From Jordan's work and from subsequent observations, one is forced to the conclusion that the finding of streptococci in skin lesions does not mean that lesions are to be attributed to streptococci. This introduces a dilemma in the question of the etiologic significance of an organism found in a skin lesion. Streptococci, staphylococci, Monilia organisms, and in this country probably also organisms of the Trichophyton group are ubiquitous and can be found in practically all skins and in practically all skin lesions if sufficiently delicate methods of culture are used. The finding of these organisms is no proof of their causal rôle. Therefore, as Dr. Mitchell has been hand and footing it about the country for the last year in the bacteriologic and mycologic investigation of these cases, others have been following him about, more or less figuratively, with syringes with bacterial extracts in order to find out whether one could tell by the skin reactions and the immunologic status of these patients which organisms were responsible for the hand and foot lesions. Unfortunately, that is not the case. However, I think that there may be another immunologic way of finding out which organisms are responsible for these lesions, and that is by the therapeutic effect of specific desensitization. In a certain percentage of cases of presumable dermatophytids one gets remarkably good therapeutic effects with desensitization treatment with Trichophyton extracts; in other cases one is forced to employ Monilia extracts. In many others, neither of these desensitizations help. I have been trying to work up to a polyvalent extract which will include staphylococci and streptococci eventually, and to attempt to desensitize this group of cases, provided they are refractory to other therapy, by this means.

Fig. 10 (case 5).—Vesicular and crusted lesions on the right hand.

DR. JOHN G. DOWNING, Boston: About a year ago, after being constantly confronted with statements that the persistence of prolonged industrial dermatitis cases was due to a secondary fungus infection, I started taking cultures of these persistent cases, employing an expert mycologist for the work. We found no fungi of a pathogenic species in these persistent dermatoses but found plenty of streptococcus organisms. The fungi that we found corresponded to those that we found in studies of the normal skin, and the streptococci corresponded in some details, with the difference that those on the normal skin were never of the Streptococcus hemolyticus strain.

DR. JAMES HERBERT MITCHELL, Chicago: I am familiar with the work on streptococci in normal skin. There are several papers on the subject in the French literature; I am familiar with those but I didn't think it necessary to mention them, as I am dealing with a pathogenic Streptococcus haemolyticus and not with a saprophytic streptococcus. Having found Streptococcus haemolyticus in a few cases, I began to fear I was overlooking the organism in other cases. I had an expert bacteriologist trying to find streptococci in cases in which they did not exist, and at times I was impatient because the organisms were not found. The hemolytic streptococcus is not ubiquitous and is not an innocent bystander. I am merely presenting these cases for your consideration. I agree with Dr. Sulzberger that, with one exception, I didn't regard the cases as mycotic eruptions, but five other physicians and dermatologists did regard them as ringworm. That is the point I am trying to make. I don't say that they were not justified in doing so. In my experience neither serum nor anything else is needed, because the lesions clear in one week with mercuric chloride baths and ammoniated mercury salves. In regard to the statements Dr. Downing made, all of these organisms are Streptococcus haemolyticus. They may have been just hanging around there as guests, but in my opinion they were having something to do with the process.

Clinical Notes, Suggestions and New Instruments

A CASE OF PETROSITIS WITH SURGICAL DRAINAGE AND RECOVERY

KARL W. GRUPPE, M.D., UTICA, N. Y.

In the last few years, medical journals have been presenting increasing numbers of reports of research and clinical work on the complication of mastoiditis known as petrositis, or involvement of the apex of the petrous pyramid. This complication, hardly recognized prior to the work of Gradenigo,[1] reported in 1904, is now receiving the attention it deserves. Diagnostic measures in which history, physical examination and roentgen studies[2] all play major parts have been established and various surgical approaches aimed at drainage of this remote region have been devised and tested. In the future, then, a lessening in the incidence of meningitis, brain abscess and chronic otorrhea from this cause may be anticipated only so far as otologists and general practitioners, who are often the first to see these cases, will familiarize themselves with the disease and the significant points in its diagnosis.

My object in this paper is to present a case illustrating the complication in question. The symptoms, physical signs and roentgen observations were definite and conform to the established pattern, to which, unfortunately, not all cases do.

REPORT OF CASE

J. S., a Polish woman, aged 38, was referred to me by Dr. Charles Greene of Utica, April 28, 1934. The story was one of gradual onset of left sided earache following a mild head cold. Discomfort increased and on the third day, before aid was sought, was associated with mastoid pain. No generalized headache, eye pain, vertigo, chills or fever were complained of. The past history revealed nothing of general or local interest.

Examination, April 28, revealed a temperature of 99 F. The left ear drum was red and bulging and intact. No canal wall sag was present but the mastoid tip and antral regions were definitely tender. There were no meningeal signs. Extraocular movements were normal as well as the optic disks. The nose, sinuses, throat and right ear were normal.

A left myringotomy was done, releasing considerable thick pus. The patient was then observed carefully and on the following day was somewhat improved. On the second day, however, the mastoid pain became worse and headache and pain behind and around the left eye were complained of. The temperature rose to 99.8. She was admitted to St. Luke's Hospital, April 30, with a tentative diagnosis of mastoiditis with petrous apex involvement, and a simple mastoidectomy was done. The mastoid was very cellular and large and seemed involved by a hemorrhagic process with here and there frank pus pocketed off. Large areas of middle fossa dura and lateral sinus were exposed and appeared healthy. The medial antral surface was then curetted and while work was being done just above the horizontal semicircular canal a thin stream of pus escaped. The

Petrous apexes, showing probe in place in the drainage tract. In the original film, definite loss of structure in the left apex is more obvious than in this reproduction.

orifice was then widened and the patient was sent back to the division for observation, the wound being left wide open. Culture showed a hemolytic streptococcus.

For about eighteen hours there was definite improvement in headache and eye pain, but on the evening of the second postoperative day severe headache developed and a questionable Kernig sign was elicited. Lumbar puncture at this time showed a pressure of 100 mm. of water, a negative Pandy test and a cell count of 6 lymphocytes. For one week varying headache and pain over the fifth nerve distribution continued and the patient complained bitterly of aching upper and lower teeth during the last day of this period. The temperature fluctuated between normal and 100.4, and mild leukocytosis was present. Roentgen examination of the petrous apexes showed pneumatized tips with probable disease on the left. The pleas of the patient for extraction of the aching teeth were ignored, and she was returned to the operating room. A Kopetzky-Almour drainage was contemplated in the event that the tract could not be followed. This, however, was not necessary, as after dissection had been done down to the superior semicircular canal it was possible to work a probe well out into the tip, followed by the release of creamy pus. The posterior buttress was then removed and more of the middle fossa floor up to the posterior

1. Gradenigo, Giuseppe: Arch. f. Ohrenh. **62**: 255, 1904.
2. Taylor, H. K.: Ann. Otol., Rhin. & Laryng. **40**: 367 (June) 1931.

canal wall, and the middle fossa dura was then elevated to about two thirds of the way to the tip. No extradural pus was found. Silkworm-gut strands were left in place in t .e probe tract and the patient was returned to the division for further observation.

Following this procedure no labyrinthine signs were noted and save for a temperature flare to 102 on the second postoperative day, at which time lumbar puncture was again negative, the course was one of gradual improvement. The tract was probed each day and the discharge lessened. The middle ear likewise started to clear, indicating that there was no secondary fistula through the peritubal cells. May 15, Dr. Kopetzky, then in Utica attending the state convention, kindly consented to see the patient and predicted recovery. May 19, Dr. Greene gave a transfusion of 500 cc. of blood to combat a secondary anemia. The patient remained afebrile from May 13 until discharge on June 4 and several white counts were normal. Some residual headache was present but easily controlled by acetylsalicylic acid. The wound healed and the middle ear returned to normal and now, over an eight months period of observation, the headaches have entirely cleared and the patient is gaining and enjoying good health.

COMMENT

The features of this case are characteristic. The eye pain, indicating involvement of the first branch of the fifth nerve, and later the involvement of all three branches as evidenced by the aching teeth, is a sign of great importance. This early eye pain along with the finding of a large pneumatized mastoid and the successful search for a fistulous tract confirmed the diagnosis of apex involvement. The type of mastoid structure is of importance, since it is almost entirely with these large cellular types that pneumatization of the tip occurs, a prerequisite to true coalescent petrositis. Recent anatomic studies have shown that tip pneumatization occurs in about 30 to 40 per cent of this type of structure. Roentgen study simply confirmed the presence of apical cells. The finding of the fistulous tract indicated deep pus under pressure and because of its escape it was considered safe to observe the patient for a time. In this connection there are undoubtedly many cases of apical involvement which, failing to give classic signs or for some reason passing unrecognized, drain themselves through the same tract by which they were infected. Some drain adequately and some go on to meningitis, labyrinthitis, brain abscess formation or the less dramatic chronic discharging ear. Sixth nerve paralysis did not occur in this case and does not in perhaps the majority of cases. Facial paralysis, often observed, likewise was not present, at least to any marked degree, although Dr. Kopetzky did feel that a slight paresis was present in this instance.

Operative procedures are of two types, the external or subdural approach advocated by Eagleton [3] and others and approaches carried out through the petrous bone itself, of which the Kopetzky-Almour [4] operation has been the most discussed. Frenckner [5] has advised the approach through the arch of the superior semicircular canal and it was this route through which drainage was established in this case, a route too hazardous unless, as occurred here, some form of tract has been established by nature, indicating soft bony structure. The choice of operation has been the subject of much debate, but certainly it is generally conceded that in the presence of a fistulous tract its location should determine at least the first attempt at providing adequate drainage. All procedures are fraught with some danger, but no one is as dangerous to life as the policy of prolonged watchful waiting. One point in favor of drainage through the bone itself is that for some time after apparent clearing a potential tract exists which may function as a safety valve should a flare up of pocketed off material occur. Subjecting the patient to a preliminary radical mastoidectomy should give little concern if it is necessary for the provision of drainage. Its performance precedes the Kopetzky-Almour and Eagleton operations but is held unnecessary by Myerson, Rubin and Gilbert,[6] who also advocate the subdural approach.

Petrous apex involvement should be borne in mind and the diagnosis considered in cases giving an acute or chronic ear history and presenting any or all of the following symptoms: generalized headache, fifth nerve pain, sixth or seventh nerve palsies, low grade sepsis, labyrinthine irritation, evidence of intracranial complication.

258 Genesee Street.

3. Eagleton, W. P.: Tr. Am. Laryng. & Otol. Soc., 1930, p. 338.
4. Kopetzky, S. J., and Almour, Ralph: Ann. Otol., Rhin. & Laryng. **39:** 996 (Dec.) 1930; **40:** 157 (March) 1931.
5. Frenckner, P.: Acta oto-laryng. **17:** 97, 1932.
6. Myerson, M. C.; Rubin, H. W., and Gilbert, J. G.: Improved Operative Technic for Suppuration of the Petrous Apex, Arch. Otolaryng. **19:** 699 (June) 1934.

RELATION OF CYSTIC DUCT OBSTRUCTION TO DEPOSITION OF CALCIUM IN THE HUMAN GALLBLADDER

REPORT OF CASE

ELLIOTT C. CUTLER, M.D., AND ROBERT BOGGS, M.D., BOSTON

The relationship of cystic duct obstruction to the deposition of calcium in stones formed within the gallbladder was demonstrated experimentally by Wilkie [1] in 1928 and elaborated on by the clinical studies of Phemister [2] in 1931. Andrews and Hrdina [3] corroborated this observation, both experimentally and clinically, in 1933. Walsh and Ivy [4] obstructed the cystic duct in four dogs and reported calcium gravel in one post mortem.[5] These authors reported cases in which the calcium content of the stones was consistently very high and in some cases the content approximated totality.

In the routine study of gallbladders in this clinic the following case was called to our attention, and we felt that it merited recording since it seems to represent an earlier stage in the deposition of calcium following cystic duct obstruction than those heretofore reported in which detailed analysis was made of the stones.

REPORT OF CASE

History.—A man, aged 54, was admitted to the surgical service with a diagnosis of cholecystitis and cholelithiasis.

For the past fifteen to twenty years the patient had had occasional attacks of vague indigestion with no relation to the food or time cycle. During the past three years the pain had become colicky in character and one month previous to admission he had a severe attack, which kept him in bed for five days. Except for the last attack, when there was a slight subicteroid tinge, there was no jaundice.

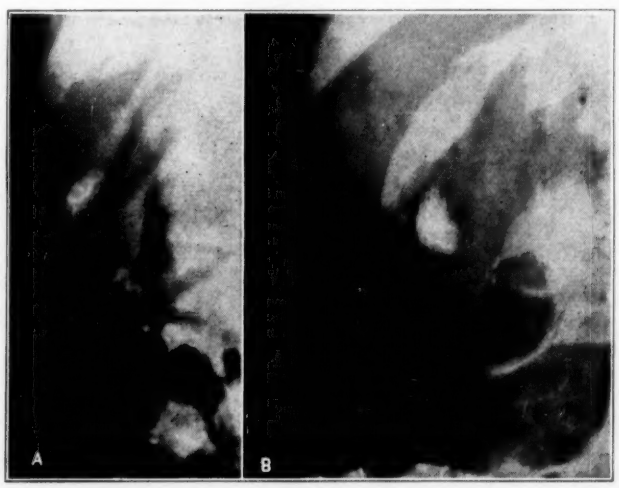


Fig. 1.—*A*, cholecystogram showing ring shadows in body and neck and minute positive shadows in fundus of gallbladder. *B*, enlargement of *A*.

From the Surgical Clinic and the Surgical Research Laboratory of the Peter Bent Brigham Hospital.

1. Wilkie, A. L.: The Bacteriology of Cholecystitis, Brit. J. Surg. **15:** 450 (Jan.) 1928.
2. Phemister, D. B.; Rewbridge, A. G., and Rudisill, Hillyer, Jr.: Calcium Carbonate Gallstones and Calcification of the Gallbladder Following Cystic Duct Obstruction, Ann. Surg. **94:** 493 (Oct.) 1931.
3. Andrews, Edmund; Dostal, L. E., and Hrdina, Leo: Etiology of Gallstones: IV, Arch. Surg. **26:** 382 (March) 1933.
4. Walsh, E. L., and Ivy, A. C.: Observations and Etiology of Gallstones, Ann. Int. Med. **4:** 134 (Aug.) 1930.
5. Fellows working in this laboratory have reported in a personal communication the accidental finding of gravel in the gallbladder and kidneys of a dog with no previous treatment that might account for it.

On admission, the temperature was 98 F., the pulse 70, and the respiration rate 20. Blood pressure was 120 systolic, 88 diastolic. Physical examination was negative. The abdomen was soft and pliable, with no areas of tenderness or rigidity. No palpable organs or masses were felt. The liver border was at the costal margin.

A cholecystogram following oral administration of dye failed to reveal the gallbladder wall. Distributed lineally from the fundus to the neck were several ring shadows approximately 7 mm. in diameter. The fundal area was filled with minute positive shadows, none having a greater diameter than 2 mm. (fig. 1).

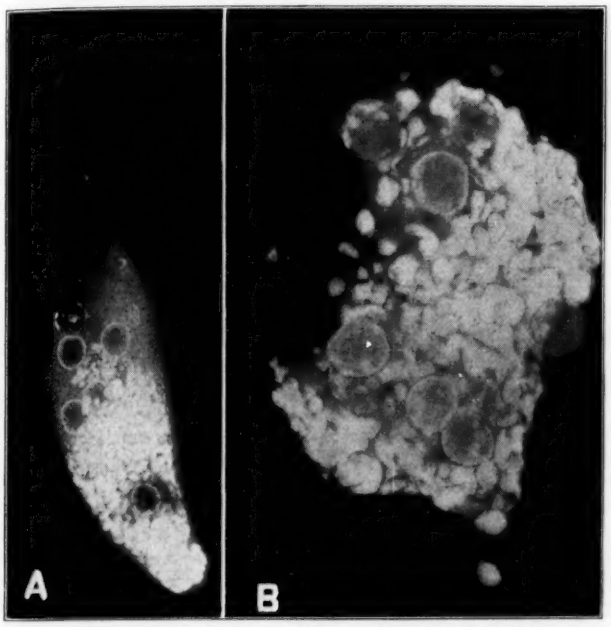


Fig. 2.—*A*, roentgen appearance of excised gallbladder. Ring shadows are displaced from original positions. *B*, roentgen appearance of contents of excised gallbladder.

Laboratory Examination.—The urine was clear, with a specific gravity of 1.018, and was negative for albumin, sugar and bile. Microscopic examination showed epithelial débris.

Examination of the blood showed 4,700,000 red blood cells, and 6,000 white blood cells, with 90 per cent hemoglobin. The differential count revealed polymorphonuclear leukocytes, 73 per cent; lymphocytes, 25 per cent; monocytes, 2 per cent; basophils, 0, and eosinophils, 0.

Cholecystectomy was performed by one of us (E. C. C.), and the common duct was explored. The convalescence was prolonged by the unfortunate occurrence of a small pulmonary embolus on the sixteenth postoperative day and subsequent edema of the left leg for several weeks but was otherwise uneventful.

Pathologic Report.—The gross specimen consisted of a gallbladder measuring 0.8 by 3.8 by 12 cm. The external surface was covered with a delicate layer of serosa and, except for a rare area of fibrosis, was everywhere smooth and glistening. The wall averaged 3 mm. in thickness. The mucosa was a light pinkish gray, and no area of erosion could be seen. The lumen contained 50 cc. of an extraordinarily tenacious greenish gray mucoid substance. Embedded in this material were nine large spherical white stones. These had a linear distribution, extending from the fundus into the neck. The cystic duct was completely obstructed by a reddish yellow stone of similar size. Throughout the fundal portion were scattered many small whitish stones roughly estimated at 200. The larger stones averaged 7 mm. in diameter and the smaller ones 2 mm. The cut surfaces of the stones were reddish brown with radiating crystalline markings. The periphery of all the stones, with the exception of a few of the smaller stones and the one in the cystic duct, was formed by a very thin layer of chalky white material. Roentgenograms of the excised gallbladder and of the contents were similar to those taken before operation (fig. 2).

Microscopically, the mucosal elements were well preserved. Numerous papillary projections were seen with a moderate amount of fibrosis in these regions. The wall was thickened and there was a moderate cellular infiltration of all the layers.

Chemical Report.—Examination of the bile showed: calcium, 28 mg. per hundred cubic centimeters; cholesterol, 750 mg., and bile salts, 0.

The large stones showed: calcium, 3.6 per cent by weight; bile salts, 7.4 per cent, and cholesterol, 89.0 per cent. The small stones showed: calcium, 24.0 per cent by weight; bile salts, 3.0 per cent, and cholesterol, 73.0 per cent.

COMMENT

The importance of cystic duct obstruction on the deposition of calcium has been fairly well established, both clinically and experimentally.[6] Reconstructing our case in the light of recent work, we have apparently a case of chronic gallbladder disease with the formation of cholesterol-pigment stones. The absence of bile pigments is compatible with the views of Andrews and his co-workers [7] in that the absence of bile salts is an important factor in cholesterol precipitation. Following the formation of stones, one of the larger stones passed into the cystic duct, obstructing that orifice and initiating the deposition of calcium, the time apparently coinciding with the onset of clinical symptoms. The recent deposition of calcium is further corroborated by the peripheral distribution and the small amount of calcium within the stones themselves.

CONCLUSIONS

This case further substantiates the theory that obstruction of the cystic duct initiates the deposition of calcium and seems to represent an early stage in that process.

721 Huntington Avenue.

CANCER OF THE TRANSVERSE COLON IN A SEVEN YEAR OLD BOY

DAMON B. PFEIFFER, M.D., AND J. K. W. WOOD, M.D.
WILLOW GROVE, PA.

In considering the question of cancer of the colon in children, one is dealing with an unusual condition. Although it does occur rather infrequently, one should keep it in mind in the consideration of the diagnosis of some obscure abdominal conditions. The incidence of cancer in persons under the age of 15 years is so low that reported cases are regarded as oddities.[1] Cases of carcinoma of the intestinal tract occurring in young persons must be looked on as extremely uncommon.[2] In considering the incidence of carcinoma of the large bowel in children, Philipp [3] stated that 28 per cent of ninety-three cases affected the intestinal tract. In 1914 Redho [4] was able to find but 536 cases of carcinoma during the period of youth in a review of the literature up to that date. Schamoni [5] performed 2,500 necropsies on children in the first ten years of life and found not one case of carcinoma. In a review of 831 cases of cancer by Janusz [6] he recorded only four instances in patients under the age of 20 years. Matzen,[7] in reporting 8,054 cancer cases from Bavaria, detected but seventeen cases during the first two decades of life. In Odessa, Medwedew [8] saw 1,181 cases of cancer in twenty-five years of observation but recorded none in children under the age of 10 years. Wainwright [9] states that, including his case, there are apparently only seven recorded cases of cancer of the colon above the sigmoid in

6. Wilkie,[1] Phemister, Rewbridge and Rudisill.[2] Andrews, Dostal and Hrdina.[3] Andrews, Edmund; Schoenheimer, Rudolf, and Hrdina, Leo: Etiology of Gallstones: Chemical Factors and Rôle of Gallbladder, Arch. Surg. **25**: 796 (Oct.) 1932.
7. Andrews, Edmund; Dostal, L. E.; Goff, M., and Hrdina, Leo: Mechanism of Cholesterol Gallstone Formation, Ann. Surg. **96**: 615 (Oct.) 1932.

Read before the Philadelphia Pediatric Society, Nov. 13, 1934.

1. Walker, R., and Daly, J. F.: J. Oklahoma M. A. **27**: 119 (April) 1934.
2. Wakeley, C. P. G.: Lancet **1**: 1017 (May 13) 1933.
3. Philipp, P. W.: Ztschr. f. Krebsforsch. **5**: 326, 1907.
4. Redho: Vrach. gaz., 1914.
5. Schamoni, H.: Ztschr. f. Krebsforsch. **22**: 24 (Dec.) 1924.
6. Janusz: Ztschr. f. Krebsforsch. **23**: 47, 1926.
7. Matzen, N.: Ztschr. f. Krebsforsch. **25**: 105, 1927.
8. Medwedew: Odessky M. J., January, 1927.
9. Wainwright, J. M.: Atlantic M. J. **28**: 419 (April) 1925.

children. His patient was the youngest, aged 11 years. Chajutin[10] stated that in 1929 the committee for cancer research had under observation 12,179 cases of cancer, but there was no case recorded in a child. He then reported a case of carcinoma of the cecum in a girl, aged 14 years. Walker and Daly[1] reported a case in a boy aged 5 years. Dr. James Ewing[11] says: "Cancer of the colon in a child of 8 years is very rare. I have personally never seen the disease at that age. In my book Neoplastic Diseases, third edition, one case is recorded at 3 years, twenty-nine under 16 years of age."

The accompanying table shows all cases of reported carcinoma of the colon above the sigmoid in children under 15 years of age.

Carcinoma of Colon Above the Sigmoid in Children

Author	Date	Sex	Age	Location
Maydl: Ueber dem Darmkrebs, Vienna, Wilhelm Branmüller	1883	♀	12	Cecum
Maydl	1883	♂	13	Cecum
Burger: Inaugural Dissertation, Munich	1893	♂	15	Ascending colon
Mayo-Robson: Brit. M. J. **2**: 963, 1895	1895	♀	14	Ascending colon
Nothnagel: Encyclopedia of Practical Medicine, Philadelphia, W. B. Saunders Company	1898	♂	12	Cecum
Ruezynski: Prag. med. Wchnschr. **29**: 551, 1904	1904	♂	13	Splenic flexure
Muralt: Arch. f. Verdauungskr. **19**: 1913	1913	♂	13	Ascending colon
Wainwright[9]	1925	♀	11	Splenic flexure
Chajutin[10]	1929	♀	14	Cecum
Walker-Daly[1]	1933	♂	5	Cecum
Pfeiffer and Wood	1934	♂	7	Transverse colon

REPORT OF CASE

History.—A boy, aged 7 years, had a severe attack of abdominal pain in December 1933. The family physician was called. He could find nothing wrong with the child and the pain had ceased. This attack of pain lasted about half an hour; there was no vomiting but there was constipation. From December

Fig. 1—Section through carcinomatous area.

until he came under our observation he had attacks of abdominal pain, but as nothing had been found they were not considered of any significance. The boy was growing taller but he seemed to be losing weight.

When he was brought to the office about 8 p. m., June 28, 1934, he complained chiefly of swelling of the right testicle. His mother said that about three weeks previously he was playing ball with other boys and was hit in the abdomen with the ball. This caused severe pain, which subsided shortly. Since that time he had had several attacks of severe abdominal pain lasting a few hours every three or four days. There had been no attacks of vomiting. That evening when he was getting ready for bed his mother noticed a swelling of the right testicle and then the boy was dressed and brought to the office. The bowels had been regular.

Fig. 2—Gross specimen of polyp and infiltrated area immediately beneath.

The temperature was 99.2 F., pulse 80, respiration rate 18. The boy was pale and had a rather apprehensive expression. The physical examination of the head was negative. The tongue was slightly coated and the tonsils were moderately enlarged and cryptic. The neck showed no palpable glands. The chest, lungs and heart were normal. On examination of the abdomen, there was no distention and peristalsis was apparently normal. There was no area of definite tenderness nor were there any palpable masses. The right testicle was swollen to about twice its normal size. There were no signs of hernia. The extremities were normal.

The past medical history showed chickenpox and measles. The father and mother were living and well. Three other children were living and well. One brother, aged 3 years, had died eight years before as a result of intestinal obstruction due to Meckel's diverticulum and peritonitis.

The patient went to school and was in the proper grade for his age.

The impression at that time was that the boy had (1) swelling of the right testicle secondary to the trauma of the accident with the ball; (2) an incipient abdominal condition with surgical complications.

The mother was advised to take the boy home, put him to bed, elevate the scrotum on a pillow and apply epsom salt as a wet dressing to the testicle. She was to give the boy a light diet and, if there should be any vomiting, to report immediately. A dose of magnesia magma was prescribed to be given in the morning for good elimination.

The next morning, according to a telephone conversation with the mother, the boy was comfortable and the swelling in the testicle had disappeared. She was advised to give the boy an enema and keep him in bed another day. There was a greenish black bowel movement as a result of the enema.

That evening, June 29, about 7 p. m., the patient was seen at home, as he had vomited some food and he had severe abdominal pain. The temperature was 99 F., pulse 76, respiration rate 18. On examination of the abdomen there was no distention, no definite tenderness or palpable masses, and the peristalsis was present but not overactive. The swelling of the testicle had disappeared. It was apparent that the boy did not have appendicitis or a Meckel's diverticulum. It was felt that the boy had an obscure surgical condition. An ice cap was ordered to be applied to the abdomen and a placebo was prescribed.

The next morning the boy was seen about 11 o'clock. He had had occasional attacks of abdominal pain and had vomited

10. Chajutin, D. M.: Ztschr. f. Krebsforsch. **29**: 389, 1929.
11. Ewing, James: Personal communication to the authors.

several times during the night. There had been four bowel movements since he had been seen the previous evening. These bowel movements were accompanied by considerable mucus but no blood. The temperature was 99.1 F., pulse 84, respiration rate 18. On examination of the abdomen a sausage-shaped mass about 4 inches long by 2 inches wide was palpated in the middle portion of the left side of the abdomen. This mass was slightly tender. The diagnosis was intussusception or a volvulus.

The boy was transferred to the Abington Memorial Hospital in the service of Dr. Pfeiffer, who thought the mass might be fecal impaction, and another enema was ordered. Good results were obtained and the mass could not be palpated. The boy felt better. The next morning another enema was given and it was effectual. The boy felt much better. The abdomen was soft and tympanitic with no masses and was not tender. The next day a barium sulphate enema was given. The patient was having severe abdominal cramps. The mass was again palpable but this time near the middle of the upper left quadrant. The temperature was 99.3 F.

A roentgen report of the barium sulphate enema showed that it flowed freely from the rectum in the descending colon about 2 inches above the level of the iliac crest. Here the flow was arrested rather abruptly, and the colon above could not be made to fill either by change of posture or under the influence of pressure.

Dr. Pfeiffer recommended operation because of the obstruction.

Operation.—A right rectus displacement incision was made. A small amount of clear fluid was present in the abdominal cavity. The mass previously felt was then located and withdrawn through the incision. It was situated in the transverse colon, just proximal to its midportion. The distal end of the colon was dilated but empty of fecal matter. The proximal end of the colon was moderately dilated and contained some feces. The lesion itself consisted of a slightly movable mass, which was free within the colon but attached to its wall, evidently a polyp. It was approximately 1½ inches (3.8 cm.) in diameter. At the base was an evident infiltration of the wall of the colon. The regional mesentery showed a number of small lymph nodes, which however seemed translucent and not suggestive of metastasis. The lesion was favorably situated for the Mikulicz procedure, and because of the obstruction present this operation was selected. The omentum was separated at a distance from the lesion; the mesentery containing the regional lymph nodes was tied, and the entire infected loop with the adherent tissues was brought out through the upper angle of the incision. The wound was closed up to the bowel and the proximal and distal segments of the bowel were severed with cautery between clamps. The wound had previously been protected with petrolatum gauze. Gauze was placed around the bowel and the clamps were enclosed in the dressing. The appendix appeared to be normal. It was not removed. The boy died the next day of alkalosis and failing heart.

The pathologic examination revealed a fibroma showing superficial ulcerations; hemorrhages; extensive round cell infiltration and several fields of misplaced, irregularly enlarged and distended intestinal glands which strongly suggest the presence of adenocarcinoma. The pathologist's diagnosis was fibroma with adenocarcinomatous changes.

CONCLUSIONS

In a case of recurring cramplike pain without any definite cause, the question of intestinal obstruction due to cancer should be thought of at any age and proper studies carried out to check the diagnosis.

217 Davisville Road.

Distribution of Estrogenic Substance.—A great deal of evidence has accumulated to show that oestrogenic substances are widely distributed throughout the animal, mineral and vegetable kingdom, but their main source of supply is the urine of pregnant women (especially during the last half of gestation), the ovaries (follicular fluid) of all mammals, and the placentae of women and animals.—Robinson, A. L., and Datnow, M. M.: The Differential Diagnosis of Pregnancy, *Lancet* **1**:1 (Jan. 5) 1935.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE.—*In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The articles will be continued from time to time in these columns. When completed, the series will be published in book form.*—ED.

THERAPY OF ARTERIAL THROMBOSIS OF THE EXTREMITIES

OUTLINE BY DR. G. W. SCUPHAM [1]

Even though the essential pathology as well as the etiology of arteriosclerosis obliterans of the extremities and of thrombo-angiitis obliterans (affecting chiefly younger persons) are different, the treatment of these two conditions is similar. Applicable in both disorders are the same methods, especially those which attempt to improve the impaired circulation. Diabetic gangrene, which is essentially arteriosclerotic gangrene in the patient with diabetes, though it may be also the result of infection, must be differentiated because of the additional systemic treatment required. Intoxications such as lead poisoning and ergotism may result in vascular disease. Polycythemia vera and a less well determined group of infectious diseases result in arterial involvement. These conditions must be treated from an etiologic point of view. Raynaud's disease (q. v.) falls into the group of functional vasospastic disorders that require separate discussion; the syndrome frequently occurs in scleroderma as well as an idiopathic vascular disease.

Even though involvement of the veins may occur in conjunction with arterial disease, and the veins are characteristically involved in thrombo-angiitis obliterans, the therapy of vein thrombosis differs from that of artery thrombosis sufficiently to require separate discussion (see therapy of thrombophlebitis).

DIAGNOSIS

The diagnosis of vascular disease should be made as early as possible, as the treatment revolves chiefly around the prevention of necrosis or its greatest possible limitation when it actually makes its appearance. Hence one should take seriously the cramplike pain on walking so severe that the patient must stop (intermittent claudication, intermittent limping, dysbasia angiosclerotica) and due to angiospastic ischemia instead of the necessary reflex dilatation of the working muscle, rather than pass it off as due to flat feet or "rheumatism," as is so frequently done. Such pain may be the precursor of gangrene. It demands investigation of the condition of the blood vessels of the extremity. "Goldflam's test" consists of observing the color of the foot while the recumbent patient raises the extended leg repeatedly. A deathlike pallor of the foot or parts of it is diagnostic. This is likely to be followed by extreme redness when the limb is next permitted to

1. After a lecture given before the Cook County Hospital Therapeutics Club, Nov. 19, 1934.

hang down. Pulsations in the arteries in the affected foot may be absent or greatly diminished. They are looked for especially in the dorsalis pedis artery (first interosseous space) or in the posterior tibial artery (behind the internal malleolus). Even the pulse in the popliteal artery may be poor. Chronic coldness of the extremity or great redness of the extremity when the limb is dependent are also likely to be present. Trophic disorders, such as indolent fissures, ulcers or a withered condition of the skin or impaired nutrition of the nails, are highly suggestive. So is rest pain. Cyanosis and paresthesia or persistent edema announce the imminence of gangrene, the first evidence of which may be one or more hemorrhagic blisters on a hyperemic base. Toes or fingers are nearly always first affected. Appropriate treatment for prevention of trophic disorders and of gangrene is the all important aim of therapy in cases presenting difficulty in walking, vague pains, and coldness of the feet.

PROPHYLAXIS

1. *Causal.*—As syphilis may be responsible for vascular disease, investigation for its possible presence and appropriate treatment, if syphilis (q. v.) is discovered, is of importance. The presence of diabetes mellitus requires special therapy (q. v.). When neither of these conditions is present, one must think of the possibility of focal infection (q. v.), precipitating or aggravating the conditions, and eliminate infectious foci when found. Neurosis (q. v.) may be responsible for instability of the vasomotor system. Tobacco is an important contributory factor to a vasospastic tendency. Hence its use must be completely interdicted, as though the patient were anaphylactic to it. As there is a possibility that ergotism might play a rôle in thrombo-angiitis obliterans, most especially of the Russian Jew, it might be advisable to forbid the use of rye bread.

2. *Circulation.*—The demands on the defective circulation should be diminished. That exertion is an undoubted predisposing factor is evidenced by the appearance of intermittent claudication and the fact that the condition appears especially in the extremity most used. Hence a threatened limb must be put at rest and in such a position as to favor optimal blood perfusion of the extremity. Standing or walking must be forbidden, and constricting influences, such as garters or tight shoes, carefully shunned.

Exposure to cold may be a determining cause of the onset of gangrene. Hence threatened extremities must be carefully protected against chilling. In extremely cold weather, a predisposed individual should stay indoors. A warm dry climate may prevent a catastrophe.

Prevention of traumatisms from corns, callosities or ingrowing toe nails is just as necessary for these patients as for the patient with diabetes (See "foot hygiene" of diabetes mellitus). Cutting of corns or callosities must be performed with complete surgical asepsis, as the beginning of serious trouble is often traceable to infection during such manipulations. Even the smallest injury requires scrupulous asepsis. "The feet should be kept cleaner even than the face." They should be kept dry by means of a sterile dusting powder.

TREATMENT

Treatment must take care of cases presenting pain, which may be present with or without lesions, and cases presenting trophic disorders and gangrene.

The treatment should always be proportionate to the degree of disturbance; but, if a mistake is made, it should be in the direction of excessive care rather than apathy, to which many a limb has been sacrificed.

Pain.—As long as the pain of intermittent claudication is relieved by the prophylactic therapy described, it may suffice. If it does not, or if pain in the toe or the calf becomes constant and independent of locomotion, it should be interpreted as the "trophoprodromal pain," an indication that trophic lesions and even gangrene are imminent and that thorough treatment is required to prevent them. This treatment consists of:

1. Rest in bed or, at least, complete prohibition of walking or standing for a month or two or even a great deal longer to permit development of collateral circulation and until the pain has completely disappeared. It should be followed by extremely gradual return to partial activity.

The position in which the affected limb should be kept when at rest is that which secures as nearly normal a color as possible. This in most of these cases is when the limb is somewhat depressed. When the degree of downward obliquity necessary to produce the optimal circulatory condition has been discovered, this should constitute for the patient his own "horizontal," which should be maintained by arrangement of the bed during periods of rest as well as during sleep. Whenever it appears that the veins stand out too prominently in a leg at this slightly oblique decline, it should be lifted up for a moment to favor return circulation.

PRESCRIPTION 1.—*Concentrated Ringer's Solution*

℞	Sodium chloride	270.00 Gm.
	Dried calcium chloride	20.00 Gm.
	Potassium chloride	10.00 Gm.
	Water, to make	1000.00 cc.

Dilute twenty-five times; e. g., add 80 cc. (approximately 5 tablespoonfuls) to 2,000 cc. (half a gallon) of water for daily consumption.

2. Hydremic plethora. (*a*) Ringer's solution. The regular and continued daily drinking of from one-half to 1 gallon of Ringer's solution (prescription 1) is probably a rational attempt at improving the circulation in the threatened tissue, a result that could not be secured by mere water drinking, as salt solutions leave the system less readily than that much water. Appearance of even a trace of edema would, of course, set the limit to this treatment.

(*b*) Hypertonic saline phleboclysis. In cases presenting a high hemoglobin and red cell count, one might prefer the slow intravenous injection of from 2 to 5 per cent sodium chloride solution, employing 150 cc. for the first injection and 300 cc. for all subsequent injections, given three times a week. These injections produce a certain amount of blood destruction, which might possibly be beneficial, and they should be stopped if anemia is produced. Results may not be evident until the treatment has been maintained for several months.

3. Hyperemia treatment. When thermic measures are applied in these cases, it must be remembered that high or low temperatures are borne with impunity only by tissues well supplied with blood. Hence the more the circulation of the limb is interfered with, the nearer the neutral point must be the temperature of the application; especially is this true during periods of phlebitis, acute or recent thrombus formation, or when phlegmons are present. While the treatment should be relatively mild, this should be given for fifteen to

forty-five minutes four to six times daily alternating with the postural treatment, so as to maintain the best possible circulatory activity over the greater part of the day and evening.

(*a*) A lamb's wool and flannel bandage covering of the entire affected limb is the mildest degree of this form of therapy and should be employed in all cases unless more active measures are used, and in intervals between these the limb should be guarded by special care against pressure sores at heel, calf or toes.

(*b*) An electric light cradle is a more powerful measure when applied as nearly constantly as possible at the temperature most comfortable to the patient. This may range from 95 to 110 F. A thermostatically controlled cradle is highly desirable, for excessive heat increases the pain. In the absence of a thermostat the patient may be instructed to turn on or off as many lights as are required for the greatest comfort. The part affected by trophic disturbances or gangrene should be carefully protected against any considerable degree of heat.

(*c*) Warm compresses are indicated if the skin is dry, extreme heat being scrupulously avoided.

(*d*) Pyretotherapy (q. v.) may be used. The therapeutic induction of fever is a valuable form of treatment and is employed particularly in thrombo-angiitis obliterans. The most common method is the intravenous injection of foreign protein (typhoid vaccine in gradually increasing doses). During the period of chill there is a generalized vasoconstriction, which can be controlled by the administration of alcohol. Thrombosis has been reported occasionally, probably a result of initial vasoconstriction. Physical measures for the induction of fever are effective and with them the initial vasoconstriction does not occur. The optimal temperature elevation for vasodilatation ranges between 100 and 103 F. Pyretotherapy is a rather severe procedure unsuitable as a general measure in elderly persons or those worn by long continued pain, sleepless nights, infection and toxic absorption from extensive gangrene. It is contraindicated in arteriosclerosis obliterans as well as in diabetes, particularly since fever lessens dextrose utilization.

(*e*) Medicinal vasodilators, such as nitrites, are too transient in their effects to be of any value. Theobromine Sodio-Acetate in 0.5 Gm. capsules, of which two may be given three times daily after meals, is of value in angiospastic cases, both thrombo-angiitis obliterans and arteriosclerosis, but is useless in Raynaud's disease. Iodide might be given in arteriosclerotic cases (q. v.) for whatever value it may possibly have in this condition.

(*f*) Periarterial sympathectomy of the large (femoral) artery may possibly be of value in cases in which there is a markedly vasospastic element, as in Raynaud's disease. The more diseased the blood vessels, the less is to be expected from this operation.

4. Enhancing development of collateral circulation. Most of these methods are contraindicated in the presence of recent extensive thrombosis or gangrene, by the presence of phlegmons, or if they produce or increase pain.

(*a*) Buerger's postural treatment is intended to induce hyperemia. It consists of three periods: (1) elevation for the minimal time to secure blanching of the foot (from thirty seconds to three minutes); (2) the foot hanging down for one or two minutes beyond the time required for maximal redness, unless pain is produced, when the time must be shortened; (3) the horizontal rest position for three minutes or longer, as required by the patient, so that six or seven repetitions of these cycles, which constitute a "séance," should not be too fatiguing. These séances, which last about an hour, should be alternated with some form of heat treatment for a half to three quarters of an hour and continued well into the evening, one hour's rest being allowed after breakfast and supper and two hours for an afternoon nap.

(*b*) Contrast baths may be applied up to the knee or the elbow, possibly twice a day, starting with immersion in hot water (not above 110 F.) for five minutes, following this by a dash of or very brief immersion in cold water (not below 50 F.), in alternation several times. The séance is finished by brisk drying after a hot immersion, to insure a good circulatory reaction.

(*c*) Intermittent compression of the main artery of the limb for one minute and releasing for five minutes, to secure reactionary redness, may be employed. These alternations are maintained for an hour and may be carried out manually or by means of the blood pressure cuff with a special cushion over the femoral or brachial artery. This may not be a practical procedure, as it often results in increased pain.

(*d*) Short alternations of positive and negative pressure by means of automatic apparatus advocated and devised by Landis and Gibbon and by Hermann and Reid (passive vascular exercise) is theoretically correct. It was designed as a method of treatment for those more severe forms of vascular disease in which the simpler measures were not successful. It is to be hoped that expectations will be realized, but its actual value will be established only by further observations.

PRESCRIPTION 2.—*Compound Analgesic Capsules*

℞	Extract of hyoscyamus	0.10 Gm.
	Phenobarbital	0.50 Gm.
	Acetanilid	1.00 Gm.
	Acetylsalicylic acid	3.00 Gm.

Mix and divide into ten capsules.
Label: One every four hours as required for pain.

5. Analgesia. Pain not sufficiently relieved by the measures described indicates the use of analgesics. Acetylsalicylic acid (a 0.3 Gm. tablet or capsule every two to four hours) is perhaps the least objectionable, unless it produces sweating. If it does, it might be combined with Extract of Hyoscyamus (0.01 Gm. per capsule). If it does not suffice to relieve the pain, Acetanilid (0.10 Gm.) might be added to it; and, especially at bed time, Phenobarbital (from 0.05 to 0.10 Gm.). When all four ingredients are indicated, they may be prescribed in one capsule (prescription 2). Opiates should be avoided if at all possible, but the patient should not be condemned to sleepless nights when a hypodermic injection of Morphine Sulphate (0.015 Gm.) can secure sleep. He should not be entrusted with its self administration, however, for fear of engendering the habit. The lavish employment of Codeine Phosphate (0.06 Gm.) is hardly justifiable in charity hospitals, because it is inferior to morphine as an analgesic and much more expensive, and here the patient's medicine is under complete control. In private practice it might be preferred because it is less habit producing.

The burning pain of trophic ulcers might be relieved by an ointment containing 5 per cent of Procaine and 10 per cent of Ethyl Aminobenzoate (prescription 3). It should be remembered, however, that analgesics discourage repair. Hence their use should be discontinued as soon as possible.

PRESCRIPTION 3.—*Analgesic Ointment*

℞ Procaine hydrochloride ..... 0.15 Gm.
Water.....enough for solution
Ethyl aminobenzoate ..... 0.30 Gm.
Hydrous wool fat..... 10.00 Gm.

Label: Apply directly to raw surface and cover with gauze.

Trophic Disorders and Gangrene.—Conservatism pays. Early surgical amputation often results in later amputation higher up. Every effort, along the lines previously described, should be made to improve the blood supply of the limb, to prevent extension of the process, and to permit time for the development of collateral circulation. The following additional local therapy is required:

(*a*) Small cutaneous lesions, such as fissures or abrasions, require strict surgical cleanliness and are best treated dry by means of dusting with Thymol Iodide. To favor the healing of a fissure surrounded by callosities, it should be converted into a shallow wound by causing exfoliation of the thickened epidermis by means of Compound Salicylic Collodion applied twice daily—not including the fissure—and soaking the feet in hot water.

(*b*) Infection, no matter how slight, as evidenced by redness, pain, swelling or exudation, calls for moist treatment. Warm (95 to 98 F.) baths of approximately physiologic solution of sodium chloride should be prescribed for half an hour every other hour, with moist, even wet, compresses of the salt solution in the intervals. If there is an infection about or under a toe nail, the latter must be at once cut in such a way as to give free escape to the exudate.

(*c*) Ulcer, including "perforating ulcer," is best treated by the more or less constant bath of slightly hypertonic (2 per cent) salt solution at 95 to 105 F. until infection is controlled. Then baths of an hour's duration suffice, followed by the postural treatment and preceded by the dry thermal measures. For patients who cannot tolerate warm baths or the hanging down posture, an irrigation apparatus that bathes the ulcer in the patient's own "horizontal" posture may secure the desired result.

(*d*) For gangrene without infection, dry treatment, as by air exposure and boric acid powder under a wire cage dressing, is indicated in addition to the previously prescribed postural and heat therapy. This should be continued in dry gangrene of one or more toes, with a tendency to demarcation, until spontaneous amputation occurs.

Amputation above the knee is often, but not always, demanded when the gangrene is progressive, implicates several toes, including the big toe, creeps up the dorsum of the foot, and ascends beyond the metatarsophalangeal joints.

(*e*) For gangrene with infection continuous baths are indicated by the appearance of tenderness proximal to the gangrenous digit, with redness or cyanosis of the overlying skin, and even a small amount of pus exuding from this area, for the presence of these phenomena converts the dry gangrene for purposes of therapy into the moist type. Foci of infection must be promptly opened by as many incisions as required, which can often be done without the necessity of anesthesia, as the part may be quite devoid of sensation. While the accumulation of pus must be prevented at all costs, the postural and heat treatments must now be discontinued, because they may favor the extension of the infection.

If, in spite of these measures, the phlegmon extends and symptoms of sepsis appear, amputation above the knee, in the lower or middle third of the thigh, should be performed, and this as early as possible, as soon as it becomes evident that nothing is to be expected from temporizing measures. Delay merely adds to the danger. The operation may be performed under nitrous oxide anesthesia, by the circular method, the femur being cut high enough to secure liberal covering of the stump in spite of retraction and a certain amount of sloughing, which must be expected in these cases. Excepting for a few catgut sutures to bring the muscles together, the wound is left fairly open, sterile adhesive plaster strips being used to approximate loosely the edges of the flaps.

Special Article

GLANDULAR PHYSIOLOGY AND THERAPY

THE GROWTH HORMONE OF THE ANTERIOR PITUITARY

HERBERT McLEAN EVANS, M.D.
BERKELEY, CALIF.

The earliest description of a hypophyseal disorder, that of acromegaly by Pierre Marie, and its identification with pituitary overactivity by Minkowski, was followed by reference of the reverse condition—dwarfism—to underactivity of the hypophysis by Paltauf. These deductions, based essentially on a hypertrophied or diminished pituitary gland, were, of course, far from demonstrating the existence in the gland of a specific ferment-like substance needed in some fundamental way before the process of growth could take place in any of the higher animals. The study of the effects of the gland substance itself could alone bring such a demonstration.

EXPERIMENTAL PRODUCTION OF DWARFISM

An immense step forward was taken by the experimental production of dwarfism when the gland was removed from young animals.[1] The classic experiments of Aschner, which were done with puppies with littermate controls, showed that an immediate arrest of growth and development was occasioned by the operation. Ablations in the rat, first done by Smith, followed by Richter and Wislocki,[2] Pencharz and

1. Aschner, B.: Demonstration von Hunden nach Extirpation der Hypophyse, Wien. klin. Wchnschr. **22**: 1730, 1909; Ueber die Funktion der Hypophyse, Arch. f. d. ges. Physiol. **146**: 1, 1912. Dandy, W. E., and Reichert, F. L.: Studies on Experimental Hypophysectomy, Bull. Johns Hopkins Hosp. **37**: 1 (July) 1925. Smith, P. E.: Ablation and Transplantation of the Hypophysis in the Rat, Anat. Rec. **32**: 221, 1926; Disabilities Caused by Hypophysectomy and Their Repair, J. A. M. A. **88**: 158 (Jan. 15) 1927; Hypophysectomy and a Replacement Therapy in the Rat, Am. J. Anat. **45**: 205 (March) 1930.

2. Richter, C. P., and Wislocki, G. B.: Anatomical and Behavior Changes Produced in the Rat by Complete and Partial Extirpation of the Pituitary Gland, Am. J. Physiol. **95**: 481 (Nov.) 1930.

Long,[3] Koyama,[4] Thompson,[5] Collip, Selye and Thomson,[6] and a host of others, demonstrated an immediate cessation of the daily gains in weight which characterize young animals; in fact, if the hypophysectomy is done on animals approximately 4 weeks of age and weighing from 70 to 100 Gm., the rat is incapable of increasing its body substance thenceforth, not a gram of gain in weight being possible under the best nutritive regimen and hygienic care.[7] Dandy and Reichert have shown incapacity on the part of completely hypophysectomized puppies to increase the shaft length of any long bone, a fact readily ascertained by measurements of the diaphyses in roentgenograms. Should even slight and slow lengthening be seen, proof is thereby given of partial rather than complete ablation of the anterior lobe.

EXPERIMENTALLY INDUCED GROWTH AND THE PRODUCTION OF GIGANTISM

It was conceivable, of course, that the dwarfism following hypophysectomy was a secondary effect; i. e., that it was due to some obscure metabolic upset consequent on loss of the gland rather than the direct outcome of the elimination of a specifically needed substance that could be justifiably called the growth hormone. It was perhaps fortunate, then, that experimental evidence of the existence of the growth hormone had been secured in another way—by the production of gigantism in normal animals, a phenomenon that would have been difficult to produce with equal ease in forms other than the rat. In 1921 Evans and Long[8] reported the experimental production of gigantism by long continued daily conveyance to rats of extracts of the anterior pituitaries of beeves. They began with daily intraperitoneal injections into a large group of animals 3 weeks of age and just weaned. An equally large group of uninjected animals that were littermate brothers and sisters of the treated ones were observed as controls throughout the experiment. In spite of the manifold disadvantages necessarily attending the treatment (introduction of foreign protein, bacteria and the like), it was evident in a few weeks that the treated animals exceeded their controls in body weight. The disparity between the treated and the untreated animals became more marked in the later epochs of life. This was due, as the growth curves showed, to the steady continuance of growth on the part of the treated animals, whereas the untreated ones showed their customary slowing or "plateau" of growth characteristic of adulthood. In growth hormone tests, advantage is taken of the fact that the difference in treated and untreated females is greatest when growth hormone is suddenly administered to them at any time after the plateau period has been reached.

Delay in recognition of the hormone was partly due to failure to conceive that it might be incapable of action save through parenteral routes. Thus many of the early experimenters fed the substance; but, early in their work, Evans and Long had accomplished adequate test of the futility of oral dosage by massive treatment in this way. In several instances they contrived to give the sole food supply in the form of fresh anterior lobe substance, which is an excellent nutriment and is relished by the rat, but not the slightest traces of growth acceleration could be discovered; there had, nevertheless, been introduced daily into the body prodigiously more of the hormone than that required to act by needle administration. In work on the growth hormone other experimenters have selected unreactive animal forms or, if they used responsive animals and administered the extracts parenterally, they gave the preparation but once or twice a week, only to be met with failure.

The gigantism or accelerated growth that may thus be induced by anterior pituitary extracts in the rat is an extreme one. It is as if one could produce human beings of 10 or 12 feet (305 or 366 cm.), whereas the Basel pathologist Rössle[9] has shown that authentic instances of human giants of 9 feet (274 cm.) have never been established. Female rats will attain a weight of over 700 Gm., their littermate sisters being under 300 Gm.; and males will weigh more than 900 Gm. with their controls barely reaching 450 Gm. Roentgenograms or preparations of the osseous system of the giants show that dimensions of approximately one and one-half times the normal may be attained. The giants are not fat but are symmetrically proportioned, larger animals; nor does their chemical[10] makeup deviate markedly from normal.

When the maximum response is reached by dosage at any one level of a particular preparation, multiplying the dose by two or by ten times shows not the slightest effect in increased growth. The limit of the body's capacity to grow has been reached and hence the limit of its capacity to utilize the hormone. At no time has a rate of growth in excess of the most rapid rate known for normal postnatal life been evoked by the growth hormone, nor does a rapid rate continue indefinitely under medication. In from fourteen to eighteen months, slowing is evident and one can become convinced that forces other than epiphyseal closure operate in some unknown way to limit growth.

An abrupt fall in weight occurs after cessation of the treatment of animals with the hormone. This fortunately does not affect their skeletons. We have made elaborate measurements of the roentgenograms of such animals showing that they lose not a whit of any skeletal dimension once attained. It would therefore appear that one need never fear that the cessation of growth therapy could be followed by loss of skeletal dimensions.

3. Penchazr, R. I., and Long, J. A.: The Effect of Hypophysectomy on Gestation in the Rat, Science **74**:206, 1931.

4. Koyama, R.: Experimentelle Untersuchungen über die Wirkung des Vorderlappenextraktes, Jap. J. M. Sc. Tr. **5**: 41, 1931.

5. Thompson, K. W.: A Technic for Hypophysectomy of the Rat, Endocrinology **16**: 257 (May-June) 1932.

6. Collip, J. B.; Selye, Hans, and Thomson, D. L.: Beiträge zur Kenntnis der Physiologie des Gehirnanhanges, Virchows Arch. f. path. Anat. **290**: 23, 1933.

7. Collip, Selye and Thomson (Gonad-Stimulating Hormones in Hypophysectomized Animals, Nature **131**: 56 [Jan. 14] 1933) have pointed out an apparent capacity for temporary and limited growth on the part of very young animals after hypophysectomy. They report that, if the operation is performed in rats 21 days in age and weighing less than 35 Gm., a gain of some 20 to 30 Gm. may occur in the proved absence of anterior lobe tissue. Since the classic experiments of Camus and Roussy (confirmed by Bailey and Bremer, Smith and others), it has been known that injury to the hypothalamus produces adiposity, and it hardly seems necessary to say that, if such an injury is inadvertently caused in the course of a hypophysectomy, gains in postoperative weight due to the adiposity will ensue.

8. Evans, H. M., and Long, J. A.: The Effect of the Anterior Lobe of the Hypophysis Administered Intraperitoneally on Growth, Maturity and the Estrous Cycles of the Rat, Anat. Rec. **21**: 61, 1921; Characteristic Effects on Growth, Estrus and Ovulation Induced by the Intraperitoneal Administration of Fresh Anterior Hypophyseal Substance, ibid. **23**: 19, 1922. Evans, H. M.: The Function of the Anterior Hypophysis, Harvey Lectures **19**: 212, 1924.

9. Rössle, R.: Wachstum und Altern, Ergebn. d. allg. Path. **18**, 1917.

10. Wadehn, F.: Versuche über die Einwirkung des Wachstumshormons auf die Maus, Biochem. Ztschr. **255**: 188, 1932; Versuche mit dem Wachstumshormon, Deutsche med. Wchnschr. **59**: 327 (March 3) 1933. Bierring, E., and Nielsen, E.: The Composition of the Tissues of Albino Rats Treated with Alkaline Anterior Pituitary Extracts, Biochem. J. **26**: 1015, 1932. Lee, M. O., and Schaffer, N. K.: Anterior Pituitary Growth Hormone and the Composition of Growth, J. Nutrition **7**: 337 (March 10) 1934.

The initial drop in weight needs further exploration, but the indications are that it is a phenomenon concerning water balance.

Obscure but indubitable is the continued need on the part of the body for the growth hormone in adult life. The glands of grown cattle yield proportionately the same amount of growth hormone as do those of rapidly growing young calves. The endocrinologist is already acquainted with the continuous production of blood cells throughout adult life and the replacement of cells lost through attrition at the intestine and skin surfaces, but these processes are apparently not significantly impaired in hypophysectomized animals.[11]

EXPERIMENTAL PRODUCTION OF ACROMEGALY

The distortion of growth in adult life that produces the disease called acromegaly is well known. The classic explanation of the disorder has been that growth has been imposed on the skull and extremities when stature changes are impossible because of epiphyseal closure. Should one learn to close prematurely the epiphyseal disks of rats, one might hope to make them acromegalic; but there are some serious objections to this simple explanation of the situation. The true distortion changes of acromegaly have been repeatedly seen in children, although they are rare.[12] Furthermore, they can be produced relatively early in life in certain species; for example, the dog. A few years ago Putnam, Benedict and Teel [13] produced changes of this sort in the English bulldog, a form perhaps unfortunate for such experiments, since the chondrodystrophic head of this strain is already accompanied by marked skin foldings that can be shown to be acromegalic stigmas. Other strains in which the head and face are normally undistorted—for example, the shepherd—can be characteristically altered in this way; and in them, by the administration of the same growth extract that caused symmetrical gigantism in the rat, there is produced in a few months skin folding which virtually closes the eyes. This marked overgrowth of the derma can be produced in the dachshund, another form in which, in spite of limb chondrodystrophy, there is no acromegaly. Here ringlets about the limbs and dewlaps and grotesque face foldings which close the eyes were readily produced.[14] It is fortunate that in our experience none of those things have occurred in which, in the presence of a growth deficiency, reparative effort has been made in order to attain normal growth. These remarks are intruded here for the light they throw on the concept, often doubted, that acromegalic distortion is really due to overabundance of the identical substance to which harmonious growth is due. Some forms, for example the rat and the rabbit, do not readily become acromegalic; others, such as the dog, readily do so. Such facts will not astonish biochemists who know instances of metabolic peculiarities to be put on a par with these differences in the reaction of the body tissues in different strains to the same substance.

11. Although the return of the hair over shaved areas in hypophysectomized animals is slower than in normal ones (Benedict, E. B.; Putnam, T. J., and Teel, H. M.: Early Changes Produced in Dogs by the Injection of a Sterile Active Extract from the Anterior Lobe of the Hypophysis, Am. J. M. Sc. **179**: 489 [April] 1930. Snow, J. S., and Whitehead, R. W.: Relationship of the Hypophysis to Hair Growth in the Albino Rat, Endocrinology **19**: 88 [Jan.-Feb.] 1935).

12. Atkinson, R. F. B.: The Onset of Acromegaly Before 15 Years of Age, Brit. J. Child. Dis. **28**: 121 (April-June) 1931.

13. Putnam, T. S.; Benedict, E. B., and Teel, H. M.: Studies in Acromegaly, Arch. Surg. **18**: 1708 (April) 1929.

14. Evans, H. M.; Meyer, K., and Simpson, Miriam, E.: The Growth and Gonad-Stimulating Hormones of the Anterior Hypophysis, Memoirs of the University of California **11**: 421, 1933.

METHOD OF DETECTION AND TITRATION OF GROWTH HORMONE CONTENT OF PITUITARY EXTRACTS

Certainly one of the greatest needs in growth hormone research is the discovery of a specific biologic test for the hormone that can be rapidly performed.[15] At the present time two reliable tests are known and are employed in the detection of the growth hormone. They are done by the use of adult normal female rats or hypophysectomized rats of either sex.

Use of Normal Adult Female Rats.—The rat is almost unique among mammals in the great delay that characterizes closure of its epiphyseal disks. In the case of the female, sexual maturity always supervenes before the end of the second month of life, and by the end of the fifth month a very marked slowing in the growth rate has occurred; i. e., the "growth plateau" is reached. This period corresponds to adulthood of other mammals and in them the epiphyseal disks are shortly converted to bone. In the case of the rat, however, although normal growth has practically ceased, the disks are cartilaginous and possess a latent power of growth; not only the long bones but also the vertebrae are able to increase markedly if growth hormone is administered in this epoch. Such animals suddenly resume a growth as rapid as that shown in the early phases of their postnatal existence, the growth curves therefore showing an almost vertical ascent from the horizontal growth plateau. One can thus be invariably certain in a period of from ten to twenty days as to whether or not one has administered a potent extract of the growth principle. It is necessary to standardize the diet and all other external circumstances, to deal with animals known to be between 5 and 13 months of age and, furthermore, to ascertain in the case of every individual rat that the growth plateau has been reached by instituting weighings at intervals of five days for from fifteen to twenty days preceding treatment. Females should be used.[16]

Use of Hypophysectomized Rats.—Hypophysectomized animals are more sensitive than normal ones to the growth hormone. They can thus be used to portray the growth hormone content of small glandules, for

15. It is unfortunate that studies of tissue culture (Túma, V.: Influence de l'extrait de lobe antérieur de l'hypophyse sur la croissance des fibroblastes in vitro, Anthropologie [supp.] **9**: 314, 1934) or Warburg chamber effects are only in their beginning. Changes in certain constituents of the blood stream have been noted, and it is possible that some such changes may be discovered to take place with promptitude after administration of the hormone. Thus Teel and Watkins (The Effect of Extracts Containing the Growth Principle of the Anterior Hypophysis upon the Blood Chemistry of Dogs, Am. J. Physiol. **89**: 662 [Aug.] 1929) have noted a decrease in nonprotein nitrogen of the blood. Gregory and Goss (The Hypophyseal Growth Hormone and Glutathione Concentration, J. Exper. Zool. **69**: 13, 1934), who first noted an increase in the glutathione concentration of muscle concurrent with weight increase, induced by the hypophyseal growth hormone, have recently (personal communication) shown a decrease in the glutathione content of the liver within eight or twelve hours in the case of normal rats treated intraperitoneally with a single massive dose of our standard alkine extract of beef anterior pituitary. Accurate and continuous measurement of the balance of certain metabolic constituents (nitrogen, calcium) may give a sufficiently reliable indication of the effect of the hormone in a test period of some four or five days.

16. Normal males cannot profitably be employed for the test (Evans, H. M., and Simpson, Miriam E.: Hormones of the Anterior Hypophysis, Am. J. Physiol. **98**: 511 [Oct.] 1931). They naturally grow faster and longer than females and it is a fact that the greatest giants that can be produced by chronic treatment are males. Nevertheless, with growth hormone males do not average more than 35 Gm. increase in body weight in the twenty day test period, as contrasted with the usual gain of 50 Gm. which normal treated females show in this time. The increased sensitiveness of the female as contrasted with the male is not a matter basically influenced by her gonads. Sterilized females are also more responsive than are sterilized males. We also wondered at one time whether it was to the greatly increased body weight of the male that one must ascribe less sensitivity; but when older females with weights identical with young males were injected, their sensitivity remained increased and was identical with that of younger females. There is also a much greater variation in the response of males to the substance as contrasted with females.

instance, when normal animals would not be influenced by the minute amount in such implants. But hypophysectomized animals are in every way sensitive, fragile creatures leading a precarious existence from week to week and, unless freshly produced by the operator, they succumb to cachexia. Hence, in spite of the advantages that accrue from the use of animals deprived of the pituitary gland, there is no valid reason for abandoning the more convenient use of normal animals as routine test objects for the growth hormone.

CLINICAL USE OF GROWTH HORMONE PREPARATIONS

It is not yet clearly established that subnormality of the hypophysis can occur as regards the production of only a single one of its hormones, for example the growth hormone, although the prevalent impression is that uncomplicated dwarfism is frequent. Even though growth deficiency often seems the sole outstanding defect, in all cases the output of other hypophyseal hormones may be subnormal, and it is probable that future research will establish the fact that medication with more than a single hormone is indicated.[17] Furthermore, recent biologic experimentation itself has begun to speak decisively for the improvement of growth when in addition to the growth hormone other hormones are concurrently administered.

Smith,[18] for instance, has shown that when the thyroid is removed an improved growth of hypophysectomized animals will take place when thyroid administration accompanies that of growth hormone; and Riddle[19] has recently stated that dwarf silver mice undertake more growth when prolactin and thyrotropic hormone are given in combination than when either is given alone.

Complete replacement therapy with growth hormone preparations after hypophysectomy in animals has not yet been conducted with highly purified growth hormone. Growth hormone preparations contaminated with traces of thyrotropic, adrenotropic and gonadotropic hormones have, however, completely restored the stature of hypophysectomized puppies in Reichert's[20] hands. On the other hand, in hypophysectomized rats some preparations have been observed to cease their growth stimulating effects after a few weeks; this phenomenon has been looked on by Collip[21] as due to the development of an anti-growth hormone. It is desirable that growth hormone preparations be free from gonadotropic effects,[22] for it is possible that function of the reproductive system hastens closure of the epiphyseal disks. This was indicated by some experiments that I made with Reichert in which the contamination of growth extracts with gonadotropic hormone developed the sexual system of a hypophysectomized puppy coincident with the induced growth. Although her growth response was rapid, epiphyseal ossification followed shortly after the estrus that was inadvertently produced. It is desirable, of course, to control the behavior of the epiphyseal disk, and its final osseous conversion must be delayed until a requisite growth has been attained in cases of human therapy. In early castrates the disks ossify later than is normal; in this has been found a natural explanation of their increased stature.

It is fortunate that, in the dwarfism produced from pituitary subnormality or ablation of the gland, the epiphyseal disks are open for a much longer time than usual (although they eventually close, as Dandy and Reichert have shown with the dog) and many forms of human dwarfism fortunately show open disks relatively late in life.

The clinical trials heretofore made by Engelbach,[23] by Shelton, Cavanaugh and Evans,[24] by Lisser, by Engelbach, Shaefer and Brosius[25] and others indicate that dwarfed children can be made to resume a growth as rapid as that characterizing the earliest epochs of childhood. Serious obstacles, nevertheless, still prevail as regards the preparation of growth hormone extracts for clinical use: I refer to the low yield of the hormone under the best of conditions from fresh pituitary tissue, the difficulty in concentration of the hormone and the instability of the extracts.

MECHANISM OF ACTION OF THE GROWTH HORMONE

There is no information yet as to whether the growth hormone acts directly on the widespread tissues of the body which it stimulates to increase. In one case the direct action of a hypophyseal hormone on its recipient tissue has been established. This is true of the thyrotropic hormone, Paal[26] having established a threefold increase of oxidation in thyroid fragments swimming in fluid to which thyrotropic hormone was added in Warburg chambers. It is possible that the remarkable growth effects of the growth hormone are indirect rather than direct ones and are due, for instance, to the stimulated overfunction of one or more other endocrine glands; for example, the thymus. Asher[27] obtained from the thymus a substance (thymocrescin) which stimulates the growth of rats. Rowntree has reported that from the administration of thymic extracts there take place wholly remarkable accelerations of growth in the first postnatal weeks of the life of the rat, a period when growth is normally most rapid and, indeed, heretofore considered the speediest possible. Houssay and Gonzalez[28] have noted thymic subnormality or atrophy after hypophysectomy and, finally, Kemp[29] has noted a disproportionate hyperplasia of the thymus of dwarfed mice when stimulated to rapid growth with hypophyseal growth hormone preparations.

The improved appetite of normal animals under the influence of the growth hormone is always strikingly evidenced by the increased food consumption, but the

17. Some degree of thyroid subnormality, for instance, may be found, although this is not necessarily the case. The difference between growth and differentiation (the latter shown by bone age, e. g., carpal development) has been well emphasized by E. K. Shelton (Osseous Development as an Index of Metabolism, Radiology **20**: 241 [April] 1933).

18. Smith, P. E.: Increased Skeletal Effects in A. P. Growth Hormone Injections by Administration of Thyroid in Hypophysectomized, Thyroparathyroidectomized Rats, Proc. Soc. Exper. Biol. & Med. **30**: 1252 (June) 1933.

19. Riddle, Oscar: Contemplating the Hormones, Endocrinology **19**: 1 (Jan.-Feb.) 1935.

20. Reichert, F. L.: Effects of Anterior Pituitary Extract on a Hypophysectomized Puppy, Proc. Soc. Exper. Biol. & Med. **27**: 204, 1929. Evans, H. M.; Meyer, K., and Simpson, Miriam E.: The Growth and Gonad-Stimulating Hormones of the Anterior Hypophysis, Mem. Univ. Calif. **11**: 413, 1933.

21. Collip, J. B.: Some Recent Advances in the Physiology of the Anterior Pituitary, J. Mount Sinai Hosp. **1**: 28, 1934.

22. This is easy to accomplish. Evans, Meyer and Simpson[14] have shown the destruction of the gonadotropic hormone with glacial acetic acid which is readily withstood by the growth hormone.

23. Engelbach, William: The Growth Hormone, Endocrinology **16**: 1 (Jan.-Feb.) 1932.

24. Shelton, E. K.; Cavanaugh, L. A., and Evans, H. M.: Hypophyseal Infantilism, Am. J. Dis. Child. **47**: 719 (April) 1934.

25. Engelbach, William; Schaefer, R. I., and Brosius, W. L.: Endocrine Growth Deficiencies: Diagnosis and Treatment, Endocrinology **17**: 250, 1933.

26. Paal, H.: Ueber die hormonale Beeinflussung des Stoffwechsels von überlebenden Schilddrüsengewebe, Arch. f. exper. Path. **173**: 513 (Nov. 24) 1933.

27. Asher, L.: Der Einfluss der Thymus auf das Wachstum und die Herstellung eines wirksamen Thymusstoffes Thymocrescin, Endokrinologie **7**: 321 (Nov.) 1930.

28. Houssay, B. A., and Gonzalez, J. M. L.: Rev. Soc. argent. de Biol. **10**: 241, 1934.

29. Kemp, T.: Die Wirkung des Wachstumshormons der Hypophyse auf erblichen Zwergwuchs der Maus, Klin. Wchnschr. **13**: 1854, 1934.

unusual growth produced by the growth hormone is not referable to so simple an explanation. It remained for Lee and Schaffer,[10] by the ingenious use of the paired feeding method of Mitchell, to show that normal rats under the influence of growth hormone will increase their body substance more than controls given the same food.

The exact mechanism of action of the growth hormone on metabolism remains entirely unknown, but a significant beginning has been made in the analysis of its effects. Since increased tissue building takes place when it is administered, it was perhaps natural to seek evidence of the retention of nitrogen, a fact first demonstrated in the studies of Gaebler [30] and confirmed by Lee and Schaffer. The latter observers express their results by stating that one may speak of the nitrogenous and fat-ash-free tissues as the constituents specifically influenced by the hormone. Gaebler showed that a single injection of a commerical preparation of the growth hormone (antuitrin G) in normal dogs caused an immediate and marked fall in urinary nitrogen (due to decreased urea excretion) which persisted for several days. The decreased nitrogen output would appear to be due without doubt to nitrogen storage in the tissues, for it cannot be attributed to the failure in the absorption of nitrogen (the feces are unchanged in their nitrogen content) or to renal damage (the blood nonprotein nitrogen actually falls, as was first shown by Teel and Watkins [13]). Teel and Cushing [31] pointed out that another immediate effect of these growth hormone preparations is the marked increase in water intake and output; the diuresis always follows polydipsia, which is primary. Gaebler also observed a great increase in heat production with increased respiratory rate and ventilation rate. Rises of as much as 1.4 degrees in rectal temperature without infection or malaise were observed. The increased heat production was due to increased oxidation of fat, evidenced in a lowering of the respiratory quotient. The large calorigenic response occurs as rapidly as after intravenously administered thyroxine but is not attributable to contamination of the growth extracts with the thyrotropic factor, for this response is also found after thyroparathyroidectomy.

The period of nitrogen storage is often clearly followed by a period of nitrogen loss, so that Gaebler feels that the preliminary effect of the hormone is to increase the "reserve" or "deposit" protein rather than to build this immediately into permanent structures. The striking effect of the hormone on protein catabolism is greatest when this is already high, as it is in adult dogs on a high protein diet with a barely positive or negative nitrogen balance.

The study of Lee and Schaffer showed that treated animals do not possess the characteristic age changes that normal rats exhibit (decreases in the proportion of water, nitrogen, fat-free dry tissue and ash, and increases in the percentage of fat) but retained with considerable exactitude their initial composition in certain chemical constituents. This propulsion of growth in the rat's adult life is therefore associated with the retention of certain juvenile chemical characteristics in the tissue produced, and the question naturally arises as to whether the "youthfulness" of this tissue indicates "youthfulness" of the animal with regard to expectance of a correspondingly longer life span. Should this be the case, there would be at hand a tool for the alteration of what has heretofore been regarded as the most fundamental characteristic of living substance; i. e., its time relationship. It is unfortunate that this has not as yet been tested by studies with statistically valid numbers of animals under the constant influence of the growth hormone as contrasted with untreated controls.[32] As a matter of fact, in spite of the results of the foregoing acute experiments of Lee and Schaffer, workers who have conveyed the growth hormone chronically to animals have noted rather the reverse effect, i. e., a premature senility.

Other studies, such as those of the physiologic performance (for example, fatigability) of such animals have not yet been made.[33] Possible changes in the mental acuity of animals forced to continue maximal growth have not as yet been investigated.

EXTRACTION AND CONCENTRATION OF THE GROWTH HORMONE

The growth hormone is probably itself a protein or so closely associated with protein as to make its separation from protein extremely difficult. The purest forms of it heretofore available when analyzed continue to contain about 16 per cent of nitrogen and to give most of the classic qualitative tests for protein. The physical characteristics of these solutions (e. g., incapacity to pass certain membranes) indicate molecular dimensions of the proteins. Furthermore, like some proteins, the hormone is inactivated by certain organic solvents. The hormone is a labile substance in every way, being readily destroyed by strong chemical treatment or high temperature, indeed, even by moderate temperatures for any appreciable period of time. For all these reasons, attempted concentration or purification procedures have been attended with many difficulties.

For extracting the hormone from anterior lobe tissue, all workers continue to employ dilute aqueous alkali, the method originally introduced by Evans and Simpson (dilute sodium hydroxide, baryta water, dilute ammonium hydroxide, and the like). These extracts are contaminated with the other physiologically active as well as inert materials that are present in this portion of the gland. The hormone, thus readily soluble in dilute alkali water along with many contaminants, is insoluble in the typical organic fat solvents (ether, petroleum ether, benzene, chloroform) but can be shown to be soluble in some of the lower fatty acids (formic and glacial acetic acids).

The problem of preliminary purification resolves itself into separation of the hormone from the greater part of the contaminating protein with which it is associated. Complete protein precipitants throw down the hormone completely, but it is impossible as yet to know whether under these circumstances one is justified in speaking of precipitation of the hormone or only of adsorption of the hormone on the precipitated protein.

30. Gaebler, O. H.: Some Effects of Anterior Pituitary Extracts on Nitrogen Metabolism, Water Balance and Energy Metabolism, J. Exper. Med. **57**: 349 (March) 1933; Further Studies of Anterior Pituitary Extracts, J. Biol. Chem. **100**: xlvi-xlvii (May) 1933; Effects of Thyroparathyroidectomy and Carbohydrate Intake on the Action of Anterior Pituitary Extracts, Am. J. Physiol. **110**: 584 (Jan.) 1935.

31. Teel, H. M., and Cushing, Harvey: Studies in the Physiological Properties of the Growth Promoting Extracts of the Anterior Hypophysis, Endocrinology **14**: 157 (May-June) 1930.

32. In spite of care, the high incidence of infection and death has interfered with such past effort as has been made to test the increased "youthfulness" of such animals.

33. The statement of Lee and Schaffer of the increased propensity of such animals to undertake muscular effort would appear to be erroneous and attributable to the condition of hunger created by their paired-feeding method of work. J. Yoshioka has shown that, when food is supplied ad libitum, animals under the influence of the growth hormone are actually less disposed to undertake voluntary movement.

The sole advantage of employing these complete protein precipitants would reside, perhaps, in the fact that by the dehydration of such a precipitate the hormone can be obtained as a relatively stable powder. Although this is naturally somewhat more concentrated than desiccated whole anterior lobe substance, a significant gain in purification could not be made in this way. On the other hand, by partial precipitation of the proteins the hormone may be made either to accompany the protein moiety which is precipitated or to remain to a sufficient extent in the supernatant fluid to be recovered from the latter. Precipitation of the hormone with the globulin fraction occurs when it is "salted out" with this fraction by the use of ammonium sulphate or, more particularly, sodium sulphate. This method has been employed by Teel,[34] VanDyke and Wallen-Lawrence,[35] and Bugbee, Simond and Grimes.[36] It separates the hormone not only from much albuminous matter but also from other contaminants, such as the blood pigment; but the "salted out" hormone (e. g., the "phyone" of VanDyke and Wallen-Lawrence) continues to be contaminated not only with much inert protein but also with recognizable amounts of gonadotropic and thyrotropic hormones and traces of the lactogenic substance.

On the other hand, the majority of the proteins can be precipitated iso-electrically and, although growth hormone is carried down with the precipitate, much of it remains in the supernatant and, with re-solution and repeated iso-electric precipitation, the hormone is no longer present in the third or fourth isoprecipitate.[37] The growth hormone may thus be made to leak continuously into such supernatants, from which it should be possible to recover it quantitatively. It can be recovered in a wide variety of ways; best, Collip believes, by selective adsorption with tricalcium phosphate in ammoniacal solution. In this way a preparation called by him the "Q-extract" can be made free from gonadotropic, thyrotropic and lactogenic hormones, although traces of the pituitary substance affecting the adrenal cortex are admitted to be present. This preparation is said to be sufficiently concentrated in growth hormone for maximal growth effects to be obtained in test animals by the daily administration of as little as 1 mg. of dry substance. These, and preparations made by other investigators that are almost equally concentrated, are undoubtedly as yet extremely impure products, and only further extended and laborious study will lead to the crystallization of the substance properly designated the anterior pituitary growth hormone.

This substance, which may be of practical importance through its crystallization and use in cases of pronounced human undergrowth in childhood, is already of sufficient theoretical importance. Without it no higher animal is capable of increasing its body substance; without it one of the basic phenomena shown by all living things—growth—cannot take place. The detection of the exact chemical nature of the hormone may not be immediately enlightening as to the nature of growth, of which so little is known; witness the recent brilliant elucidations of the chemical structure of the vitamins, which have not thereby explained their physiologic rôles. But in the former case, as in the latter, no one will gainsay that significant progress has been won in the power of mankind to exercise over the living organism an ever increasing control.

34. Teel, H. M.: A Method of Purification of Extracts Containing the Growth Promoting Principle of the Anterior Hypophysis, Science **69**: 405, 1929.

35. VanDyke, H. B., and Wallen-Lawrence, Z.: On the Growth-Promoting Hormone of the Pituitary Body, J. Pharmacol. & Exper. Therap. **40**: 413 (Dec.) 1930.

36. Bugbee, E. P.; Simond, A. E., and Grimes, H. M.: Anterior Pituitary Hormones, Endocrinology **15**: 41 (Jan.-Feb.) 1931.

37. Evans, H. M.; Meyer, K., and Simpson, Miriam E.: The Growth and Gonad Stimulating Hormones of the Anterior Hypophysis, Mem. Univ. Calif. **11**: 18, 1933.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE. HOWARD A. CARTER, Secretary.

SHORT WAVE DIATHERMY

PRELIMINARY REPORT

FRANK HAMMOND KRUSEN, M.D.
PHILADELPHIA

Within the past year there has been an enormous sale to the medical profession of a new type of high frequency apparatus. This device has been advertised as a distinct improvement over the old type "long wave" diathermy machine. Used at first for producing general fevers, the appliance is now being sold for the production of local heating effects on the human body.

The method of treatment is known variously as short wave therapy, ultra-short wave therapy, radiothermy, radiathermy, short wave diathermy, and so on.

The apparatus is roughly somewhat similar to the old type diathermy machine, with the exception that the electric current frequency in cycles is very much higher: up to 300 times the frequency employed for diathermy.

The appliance resembles in construction the short radio wave transmitter used in police and amateur radio broadcasting, with the exception that the electrical energy, instead of being dispersed from antennas, is confined between condenser plates.

Whereas the current frequency of the ordinary diathermy machine is about one million cycles per second, the current frequencies of these machines vary from ten million cycles per second (30 meter wavelength) to one hundred million cycles per second (3 meter wavelength). If the device produces radio waves of wavelengths between 12 and 30 meters, it is spoken of as a short wave machine, and if it generates wavelengths of from 3 to 12 meters, it is called an ultra-short wave apparatus.

With the ordinary diathermy machine, it is necessary to place metallic electrodes in contact with the skin or mucous membranes. With the short wave machine, it is not necessary to make skin contact, insulated metallic condenser plates being placed a half inch or more from the body surface. With ordinary diathermy, heating effects are produced by conduction; whereas, with short wave diathermy, heating is due to dielectric losses in a condenser field.

The medical profession has been extensively circularized with hyperenthusiastic literature extolling the advantages of this new form of therapy. Extravagant therapeutic claims have been put forward, based largely on the writings of Erwin Schliephake, a German physician, whose assertions have been not only unconfirmed in this country but also partially refuted on the continent. For example, with a co-worker, Haase, he reported a selective lethal action on various microorganisms in vitro with specific wavelengths of short

radio waves,[1] whereas Hasche and Leunig[2] exposed cultures of staphylococci and streptococci in distilled water, saline solution, bouillon, milk, and on agar-plates to ultra-short waves of different frequencies and intensities for periods of time up to eight and a half hours, and they observed no inhibitory or destructive effect on the bacteria. They concluded that ultra-short waves exhibit no selective temperature or electromagnetic effects on bacteria in vitro.

In addition, Schliephake has made such extraordinary claims as the following: "I have treated many hundreds of furuncles, even large carbuncles, on every possible part of the body, as well as hidradenitis, panaritium, tenosynovitis, etc., and I am able to state that ultra-short wave therapy has not failed in a single case. The average time of cure was four and one half days and no patient required an incision or other operation."[3] Again he writes: "So far I have treated more than twenty-five patients with pulmonary abscesses, suppurating pneumonia, large pleural empyemas. They were all cured without operation; only in the case of one patient was a large puncture made."[3] Even the most credulous physician, who is willing to grant that there is much therapeutic value in short wave therapy, can hardly credit such sweeping conclusions until they are more fully confirmed by other workers. Yet the foregoing statements, and many similar ones, are freely quoted in the advertising literature now broadcast to physicians.

To the average physician, who has had little time to study it, the short wave diathermy machine presents certain characteristics that are distinctly appealing:

1. He is told that the device is extremely simple to operate. For example, one manufacturer writes that it is "possible for a novice to be properly instructed in a few minutes."

2. He is told that it is no longer necessary for him to fasten metal plates carefully and smoothly to the skin, as with the old diathermy machines; that "the application simply comprises embracing the area to be treated between two pad electrodes in any convenient manner."

3. He is shown pictures that illustrate two rubber pads lying loosely outside the patient's clothing as the treatment is given, and he is told that "the placement of electrodes over the clothing without the necessity of bandages, sandbags, etc., saves considerable time in application and does not require disrobing the patient."

4. He is even advised blandly by one manufacturer that, "since no electrical contact is made, 'arcing' and burns are impossible."

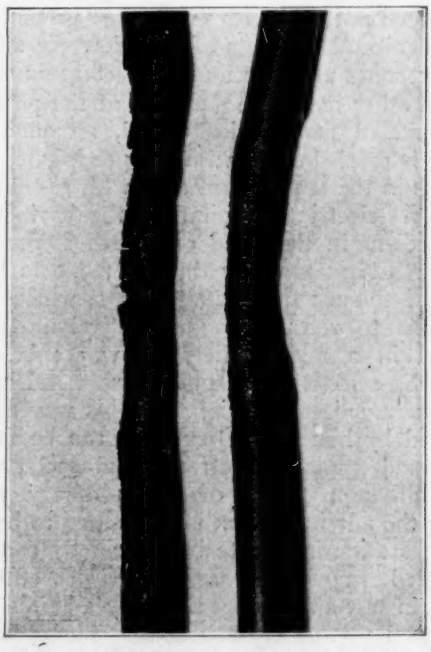
5. He is informed that the time of treatment need be only about one-third that of a diathermy treatment.

6. He is led to believe that there is a uniform deep heating of the tissues between the two electrodes.

As a matter of fact:

1. The apparatus is not entirely safe or simple to operate, and it is, I believe, the consensus among experts in physical therapy that these machines need further perfection and more clinical study. The reputable manufacturers view with alarm the fact that they are forced to rush hastily to the making of these machines in order to protect themselves in a highly competitive field. One engineer, representing a high frequency concern, speaking to a group of physicians, recently made the statement: "We, as manufacturers, have a great deal to learn as regards the construction of short wave equipment."

Two concrete examples of imperfections in manufacture have been noted in hospital clinics. In one instance a short wave machine was being used for treatment, when the rubber insulation on one of the treatment electrodes suddenly burst into flame and slightly burned the patient before the technician could remove it. In another case an ultra-short wave machine was being used to treat a patient when the electrode cables came in contact with each other; after several minutes the cables suddenly flamed at the point of contact (as shown in the illustration), scorching the front of the apparatus and burning the technician's hands when she pulled the cables loose but, fortunately, doing no other damage. It would seem that, even with fairly heavy insulation of cables, a concentration of heat may occur



Apparently well insulated new electrode cables of ultra-short wave machine after they had burst into flame when they simply came in contact with each other during a treatment.

when they touch each other sufficient to cause the rubber covering to burst into flame. One physician reports having a rubber cable burn during a short wave treatment when it came into contact with the edge of a metallic bed.

There is still no agreement as to which wavelength is most satisfactory for therapeutic purposes. At present there is no accurate method of measuring dosage with these devices. Kovacs[4] has stated that "it is evident that short wave local therapy in its present stage offers only a crude mode of regulation and control of dosage."

2. The application of electrodes is not a simple matter. It is stated by the experts in this field that it is necessary to space them extremely accurately at measured distances from the skin surface in order to obtain proper localization of heat. No satisfactory orificial electrodes have yet been devised. There is

1. Haase, W., and Schliephake, E.: Versuche über den Einfluss kurzer electrisher Wellen auf das Wachstrum von Bakterian, Strahlentherapie **40**: 133 (March) 1931.
2. Hasche, E., and Leunig, H.: Dosage of Ultrashort Waves: Influence of Intensity and Frequency on Bacteria in Vitro, Strahlentherapie **50**: 351 (June) 1934.
3. Schliephake, E.: Kurzwellentherapie, Jena, Gustav Fischer, 1932.
4. Kovacs, Richard: Electrotherapy and the Elements of Light Therapy, ed. 2, Philadelphia, Lea & Febiger, 1935.

always difficulty in avoiding concentration of heat from the cables leading to the electrodes, because the field that is produced by the cables is nearly as powerful as the fields of the electrodes themselves.

3. It is most dangerous to attempt to give these treatments through clothing. One reputable manufacturer advises: "If you use the electrodes over clothing, you are bound to produce perspiration, and will and must get burns." Kovacs [4] writes: "The application of electrodes over the clothed body makes a close observation of incipient burns of the skin impossible; it also breeds carelessness in neglecting the elementary rule of close inspection of the parts before and after every treatment."

4. In the condenser field between the electrodes, hot spots occur constantly in areas of moisture. In more than a year's observation of short and ultra-short wave machines, I have observed that, whenever the part becomes heated and perspiration forms, there is annoying burning. While this burning is relatively infrequently followed by anything but the mildest of first degree burns of the skin, still, the phenomenon is one of the greatest drawbacks to short wave diathermy. Even when every effort is made to keep the skin dry by means of dry towels or dry felt next to the skin, burning sensations are far more common than is the case with ordinary diathermy. In addition, deep tissue burns of severe nature have been reported by several workers. Schmidt [5] reports a severe coagulation of the tissue beneath the skin in one case, with little change in the skin itself. Another investigator reports that, while testing a short wave machine on himself, he received a severe 1½ inch circular burn of the skin "without having felt it at the time of its production." Coulter [6] has reported the observation of skin burns from short wave therapy "entirely comparable in their appearance to those produced by ordinary diathermy." Not only, therefore, is the statement that "burns are impossible" entirely fallacious, but also one may go further and say that, in the absence of actual burns burning sensations are more common than with ordinary diathermy, even when the most careful technic is employed.

5. The fact that it is claimed that less time is necessary to heat the tissues with short radio waves than with ordinary diathermy merely emphasizes the point that these machines may have a greater energy output and hence are potentially more dangerous.

6. There are, to date, very little clinical data to show that short wave therapy has any great advantage over ordinary diathermy. Whereas Schliephake [8] claims superior penetration, Schultze and Rach [7] applied short waves to the pelvis, with electrodes over the symphysis and under the buttocks, measured the temperature in the urine-filled bladder, vagina and rectum with alcohol thermometers, and concluded that a pronounced heat effect could not be recognized in these regions, although a noticeable heating of the skin could be ascertained and the patients felt definite sensations of heat.

CONCLUSIONS

Before short wave and ultra-short wave diathermy machines are used extensively:

1. They should be improved in construction, and the manufacturers should specify definitely the wavelengths of the apparatus and their output in watts.

2. Fire hazards should be eliminated.

3. An accurate method of measuring dosage should be perfected.

4. More data concerning the physiologic effects of the waves they produce should be amassed.

5. The idea that the apparatus is simple to operate and that treatment may be given through the clothing should be dispelled.

6. The technic of application should be improved so that the danger of burning sensations is lessened.

It would seem that with further study by physicists and engineers concerning the proper methods of constructing apparatus, and with further clinical investigation by especially skilled physicians in hospital physical therapy clinics, short wave diathermy may prove to be a useful therapeutic agent. But at the present time many of these devices have not been sufficiently perfected, and it must be confessed that knowledge of the exact physiologic effects of these waves is very limited. Extensive employment of these machines at the present time can lead only to unsatisfactory results and may cause condemnation of a method of treatment that might otherwise be found serviceable.

5. Schmidt, W. H.: Personal communication to the author.
6. Coulter, J. S.: Personal communication to the author.
7. Schultze, R. F., and Rach, W.: Untersuchungen über die Tiefenerwärmung des menschlichen Organismus in Kurzwellenfeld, Arch. f. Gynäk. **157**: 468 (Aug.) 1934.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

PAUL NICHOLAS LEECH, Secretary.

AMINOACETIC ACID

Modern treatment of the muscular dystrophies has been based primarily on the assumption of a neurogenic or myoneural origin; this, despite the observations of Duchenne,[1] Erb,[2] and Friedreich,[3] which demonstrated definite pathologic localization within the affected muscular tissue per se. Very recently a number of independent workers in the field of muscular metabolism have published studies which lend support to these earlier views.

Brand, Harris, Sandberg and Ringer [4] were first to recognize the relationship of aminoacetic acid (glycine, glycocoll) to the origin of creatinuria, although as early as 1921 Gibson and Martin [5] had demonstrated a greater creatine excretion in animals on diets high in protein, particularly when 55 Gm. of a total of 75 Gm. of dietary protein was in the form of gelatin.[6]

Beard and Barnes [7] found that, while the individual feeding of all amino-acids increased the creatine content of striate muscle in rats, the magnitude of this increase was in no wise proportionate to the respective effect on urinary creatine. In these studies aminoacetic acid (glycine) was shown to have a more pronounced effect on creatine excretion than any other amino acid, while glycocyamine, histidine, valine and a number of others proved much more effectual in elevating the muscular creatine. No relationship to specific dynamic action could be discerned and the authors conclude, as verified by Luck,[8] that creatinine and creatine are not exclusively endogenous but may

1. Duchenne, G. B. (of Boulogne): De l'électrisation localisée, ed. 2, Paris, 1861 (quoted from Beard and Barnes [7]).
2. Erb, W.: Arch. f. klin. Med. **34**: 467, 1884; Ztschr. f. Nervenh. **1**: 1, 1890 (quoted from Beard and Barnes [7]).
3. Friedreich, N.: Ueber progressive Muskelatrophie, Berlin, 1873 (quoted from Beard and Barnes [7]).
4. Brand, E.; Harris, E. M.; Sandberg, M., and Ringer, A. I.: Studies on the Origin of Creatine, Am. J. Physiol. **90**: 296 (Oct.) 1929.
5. Gibson, R. B., and Martin, F. T.: Some Observations on Creatine Formation in a Case of Progressive Pseudohypertrophic Muscular Dystrophy, J. Biol. Chem. **49**: 319 (Dec.) 1921.
6. Gelatin contains approximately 25 per cent of aminoacetic acid.
7. Beard, H. H., and Barnes, Broda: The Influence of Feeding Proteins, Amino-Acids, and Related Substances upon Creatine-Creatinine Metabolism, J. Biol. Chem. **94**: 49 (Nov.) 1931.
8. Luck, J. M.: Metabolism of Amino Acids, J. Biol. Chem. **77**: 13 (April) 1928.

depend substantially on the exogenous protein of the diet, quantitatively and qualitatively.

Brand and his co-workers,[4] Milhorat, Techner and Thomas,[9] Boothby[10] and Kostakow and Slauck[11] coincide in the observation that, in the progressive and pseudohypertrophic types of muscular dystrophy, the urinary excretion of creatine is considerably augmented and that such individuals excrete ingested creatine practically quantitatively. Conversely, Boothby has shown that in myasthenia gravis the urinary creatine is so scant as to reduce the creatine nitrogen: preformed creatinine nitrogen ratio to the neighborhood of 0.1:1.0, as compared with a like ratio in the muscular dystrophies of from 1:1 to 3:1. Apparently, then, myasthenia gravis is etiologically distinct from muscular dystrophy, not only clinically (age of onset, character, course, localization, and so on) but in the nature of the disturbance of intrinsic muscular metabolism as well. Contradictory though these observations may seem, aminoacetic acid has proved of definite and heretofore unequaled benefit in the treatment of diseases of either class. With reference to the different clinical entities that have been described under the general heading of primary muscular dystrophy, it is not inconceivable that with further information it may be shown that they have a common etiologic or chemical basis. The various clinical entities as now referred to may actually be different phases of the same morbid process.

Milhorat and his co-workers[9] treated six cases of muscular dystrophy with aminoacetic acid, three each of the progressive and the pseudohypertrophic types. In these cases, while 5 Gm. of aminoacetic acid daily was sufficient to produce an increased creatinuria, dosage of from 15 to 20 Gm. resulted in an increase varying from 100 to 1,000 per cent over the original quantity of creatine excreted. Following two to three weeks of treatment the creatinuria in these patients fell to the initial control level irrespective of the continuance of aminoacetic acid, and, coincident with these metabolic changes, noteworthy clinical improvement was seen in all. (On withdrawal of aminoacetic acid, the original metabolic state is said to return within three to four weeks.) Initially, a curious "crawling or rumbling" sensation appeared in the more affected muscle groups, at times sufficiently severe to prevent sleep. This feeling is reported to diminish soon (from three to four days) after the creatinuria begins to drop to the initial level and to disappear within a few days to a few weeks after that level is reached, provided aminoacetic acid is continued. A significant amelioration of the intense fatigue is then said to ensue, resulting in the desire and ability of the patients to perform movements impossible for a considerable time previously. Finally, improvement is great enough to allow of the resumption of activities long since impossible (climbing stairs, arising from the floor unaided, bicycle riding, and the like). Though all cases are most favorably affected subjectively, the time required to attain given degrees of objective improvement is reported as widely variable with the individual patient. Following cessation of aminoacetic acid therapy, improvement continues until the previously described regressive metabolic changes take place, at which time relapse becomes apparent. Resumption of aminoacetic acid, conversely, brings about an equally prompt remission. This series was controlled by three unrelated cases (one of severe chronic articular rheumatism, one of congenital idiocy and one of amyotropic lateral sclerosis). In these controls under aminoacetic acid, no increase in creatinuria, no improved feeling of well being, no demonstrable metabolic change, and no increase in ability to retain ingested creatine was noted. In short, the administration of aminoacetic acid to the control group was without any notable effect. The authors conclude that, in view of these observations, it cannot be assumed that the action is due to any nonspecific irritative response to aminoacetic acid but rather to an at present obscure but fundamental rôle of that amino acid in the physiology of striate muscle. It may be observed in this connection that there are many observers now convinced that the phosphocreatine content of muscle bears a significant and essential relationship to muscular contraction. Kostakow[12] has verified these reports in part in a series of sixteen cases, in fifteen of which the disease was found to have been inherited as a sex-linked recessive among a familial group of fifty-five individuals studied. He notes further (*a*) that improvement is inversely proportional to the duration and rate of progression of symptoms (but not to the age of the patient) and directly proportional to the extent to which affected muscles remain capable of action, and (*b*) that active patients require much more aminoacetic acid than those at rest.

Boothby[13] records twenty-six cases of progressive muscular dystrophy with no deaths or relapses, and a general improvement in the subjective state; but only four of these exhibited any indication of regaining previously lost ability to perform some particular movement. The biochemical phenomena outlined in other studies are verified and it is concluded that with aminoacetic acid the progressive downward course of the disease is, at least, effectually halted. In myasthenia gravis, however, more extensive investigations are reported, involving a series of forty-seven patients under treatment for periods varying from three to eighteen months. Of these (all of whom received 30 Gm. of aminoacetic acid daily) thirteen have returned to their usual work and may be classed as complete recoveries; nine are greatly improved and able to perform moderate or part time work; seventeen are moderately improved (most of this group having been under treatment but a short time); and one has been lost in the follow up. Of the seven who died, but two showed no improvement in spite of treatment; one died the day following admission; another died of pneumonia; another was a suicide, while two forsook treatment after satisfactory initial improvement to die of the disease. Thus but three of forty-three patients (about 7 per cent) receiving optimal treatment died and more than 50 per cent of the entire group are or have been working full or part time for a year or more. Occasional minor relapses are reported in all, but of no appreciable portent or magnitude. The question of the effect of aminoacetic acid on creatinuria in myasthenia gravis is contradictory; however, Boothby[10] and Adams and Power[14] reported an increase under treatment, while Schmitt[15] claimed an equally significant or proportionately greater decrease. Schmitt, in his two cases, reports practically complete cures obtained in advanced stages, irrespective of the conflicting laboratory studies.

Other studies involve the general "pick-me-up" qualities of aminoacetic acid when it has been employed in a multitude of complaints all centering about the normal individual with "that tired feeling."[16] As expressed by Moersch,[17] Hench[18] and Wilder,[19] the difficulties involved in obtaining critical evidence in such conditions are so involved that extensive studies are necessary before any conclusion may be reached and the Council does not feel that such use can be recommended. It may be cited, though, that Wilder and his son demonstrated on themselves a decrease (average) of better than 50 per cent in the urinary creatine excretion during vigorous exercise after taking aminoacetic acid for one week.

9. Milhorat, A. T.; Techner, Fritz, and Thomas, Karl: Significance of Creatine in Progressvie Muscular Dystrophy, and Treatment of This Disease with Glycine, Proc. Soc. Exper. Biol. & Med. **29**: 609 (Feb.) 1932.

10. Boothby, W. M.: Myasthenia Gravis: A Preliminary Report on the Effect of Treatment with Glycine, Proc. Staff Meet., Mayo Clin. **7**: 557 (Sept. 28) 1932.

11. Kostakow, S., and Slauck, A.: Die Glykokollbehandlung der progressiven Muskeldystrophie, Deutsche Med. Wchnschr. **59**: 169 (Feb. 3) 1933.

12. Kostakow, S.: Progressive Muscular Dystrophy: Its Heredity and Its Treatment with Glycine, Deutsches Arch. f. klin. Med. **176**: 455 (July 9) 1934.

13. Boothby, W. M. (footnote 10); Myasthenia Gravis: Effect of Treatment with Glycine and Ephedrine, Proc. Staff Meet., Mayo Clin. **9**: 593 (Oct. 3) 1934; The Clinical Effect of Glycine in Progressive Muscular Dystrophy, in Simple Fatigability, and on Normal Controls, ibid., p. 600.

14. Adams, Mildred, and Power, M. H.: Chemical Studies of Patients with Myasthenia Gravis and Progressive Muscular Dystrophy, Proc. Staff Meet., Mayo Clin. **9**: 598 (Oct. 3) 1934.

15. Schmitt, E. O. G.: Glycine in the Treatment of Myasthenia Gravis, Ann. Int. Med. **7**: 948 (Feb.) 1934.

16. Article by Tripoli and Beard (Muscular Dystrophy and Atrophy, Arch. Int. Med. **53**: 435 [March] 1934) and by Tripoli, McCord and Beard (Muscular Dystrophy, Muscular Atrophy, Myasthenia Gravis and Strabismus, J. A. M. A. **103**: 1595 [Nov. 24] 1934) presented additional evidence of the usefulness of aminoacetic acid in the treatment of muscular dystrophy and myasthenia gravis.

17. Moersch, F. P.: Forms of Myopathy and Related Muscular Affections, Proc. Staff Meet., Mayo Clin. **9**: 589 (Oct. 3) 1934.

18. Hench, P. S.: A Consideration of Muscular Pain and Fatigue with a Note on Glycine: Preliminary Comment, Proc. Staff Meet., Mayo Clin. **9**: 603 (Oct. 3) 1934.

19. Wilder, R. M.: General Discussion, Proc. Staff Meet., Mayo Clin. **9**: 606 (Oct. 3) 1934.

From the many studies reported on aminoacetic acid it is quite apparent that its use in the treatment of myasthenia gravis and muscular dystrophy of either the progressive or the pseudohypertrophic type offers the patient greater hope than any form of treatment heretofore employed. Its use in other conditions cannot as yet be recommended on the basis of the meager investigations thus far reported. The Council declared aminoacetic acid acceptable for New and Nonofficial Remedies.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

AMINOACETIC ACID.—Glycocoll.—Glycine.—CH_2NH_2COOH.

Actions and Uses.—Observations of a number of workers have shown aminoacetic acid (glycocoll, glycine) to exert a significant effect on urinary and muscle creatine in patients the victims of myasthenia gravis, and progressive or pseudohypertrophic muscular dystrophy. Coincident with the altered creatine metabolism definite, and in many instances remarkable, degrees of clinical improvement or amelioration of symptoms have been reported. In practically every case, irrespective of the actual degree of objective improvement, noteworthy alteration of the patients' subjective state occurs with significant diminution in the ever present and harassing sensation of fatigue.

While some observations would indicate that aminoacetic acid may exert an action in all forms of fatigue, this work has not been critically controlled and, for the present at least, its use had best be confined to the three pathologic states enumerated.

Dosage.—Aminoacetic acid is administered in an average dosage of from 20 to 30 Gm. daily, usually in some palatable liquid vehicle such as milk. Some workers have employed ephedrine in 3/16 to 3/8 grain dosage three or four times daily, conjointly with aminoacetic acid. Evidence for or against such use is controversial and the decision must depend on the individual case until more convincing studies are reported.

Aminoacetic acid occurs as a light, white, odorless, crystalline powder, possessing a sweetish taste. It is freely soluble in water, very slightly soluble in alcohol, and practically insoluble in ether. Aminoacetic acid turns brown at about 228 C., and melts with decomposition (foaming) at 232-236 C. (U. S. P. X method).

Treat separately 2 cc. portions of an aqueous solution of aminoacetic acid (1:10) as follows: Add 0.3 cc. of diluted hydrochloric acid and 0.3 cc. of sodium nitrite solution (1 in 2): a vigorous evolution of gas occurs. Add 1 cc. of ferric chloride solution: a deep wine color forms, which disappears after addition of excess diluted hydrochloric acid solution, and reappears on addition of excess stronger ammonia water. Add 0.1 cc. liquefied phenol solution and 5 cc. sodium hypochlorite solution (2 per cent active chlorine): a blue color forms.

Ten cc. of an aqueous solution (1 in 10) conforms to the U. S. P. X test for heavy metals. Dissolve 3 Gm. of aminoacetic acid in from 30 to 40 cc. of water and treat according to the U. S. P. X turbimetric test for chlorides: the turbidity is not more than that produced in a control test made with 0.25 cc. of fiftieth-normal hydrochloric acid. Dissolve 3 Gm. of aminoacetic acid in water and treat according to the U. S. P. X turbimetric test for sulphates: the turbidity is less than that produced in a control test made with 0.2 cc. of fiftieth-normal sulphuric acid. Boil 10 cc. of an aqueous aminoacetic acid solution (1 in 10) for one minute, and set aside two hours: the solution appears as limpid and mobile as before boiling.

Heat about 0.4 Gm. of aminoacetic acid, accurately weighed, for four hours at 100 C.: the change in weight is not more than 0.0002 Gm. The ash from 0.4 Gm. weighs not more than 0.0004 Gm. Treat from 0.26 to 0.32 Gm. of aminoacetic acid, accurately weighed, according to the procedure for nitrogen determination in Medical War Manual No. 6, Laboratory Methods of United States Army, 1919, p. 222: the nitrogen content is not less than 18.4 per cent nor more than 18.8 per cent.

Aminoacetic Acid-Pfanstiehl.—A brand of aminoacetic acid-N. N. R.

Manufactured by the Pfanstiehl Chemical Co., Waukegan, Ill. No U. S. patent or trademark.

ORTAL SODIUM (See THE JOURNAL, March 24, 1934, p. 928).

The following dosage form has been accepted:

Capsules Ortal Sodium, 5 grains (0.3 Gm.).

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

WARRANTY SIEVED GREEN BEANS

Manufacturer.—The Nielsen Corporation, Ltd., Oakland, Calif.

Description.—Sieved green beans prepared by efficient methods for retention in high degree of the natural mineral and vitamin values. No added sugar or salt.

Manufacture.—Succulent green beans are delivered to the plant, immediately washed, and subsequently processed and canned by essentially the same procedure as described for Warranty Sieved Spinach (THE JOURNAL, Feb. 2, 1935, p. 399).

Analysis (submitted by manufacturer).—

	per cent
Moisture	93.2
Total solids	6.8
Ash	0.5
Sodium chloride	0.04
Fat (ether extract)	0.1
Protein (N × 6.25)	1.5
Reducing sugars as invert sugar	1.4
Sucrose	0.3
Starch	0.9
Crude fiber	0.7
Carbohydrates other than crude fiber (by difference)	4.0

Calories.—0.2 per gram; 6 per ounce.

Vitamins.—The method of preparation and processing insures the retention in high degree of the natural vitamin values.

Claims of Manufacturer.—Specially intended for infants, children and convalescents, and for special smooth diets. Only warming is required for serving.

DELICIA OLEOMARGARINE

Manufacturer.—John F. Jelke Company, Chicago.

Description.—Margarine prepared from refined coconut oil, water, cottonseed oil, cultured milk, salt, monostearyl sodium sulphoacetate and sodium benzoate (0.1 per cent).

Manufacture.—The method of preparation is essentially the same as that described for Jelke's Good Luck Vegetable Oleomargarine (THE JOURNAL, July 28, 1934, p. 260).

Analysis (submitted by manufacturer).—

	per cent
Moisture	17.6
Ash	3.5
Sodium chloride	3.4
Fat (ether extract)	78.5
Protein (N × 6.25)	0.3

Calories.—7.1 per gram; 202 per ounce.

THAMES VALLEY ASSORTED DICED VEGETABLES

Distributor.—The Yantic Grain & Products Co., Norwich, Conn.

Packer.—The Larsen Company, Green Bay, Wis.

Description.—Mixture of carrots, potatoes, celery, green beans, cabbage, peas, corn, lima beans, onions, sweet peppers, salt and water prepared by efficient methods for retention in high degree of the natural mineral and vitamin values; the same as the accepted Larsen's Veg-All—"A Magic Garden" for Soups, Salads, Vegetable Dishes (THE JOURNAL, Aug. 12, 1933, p. 525).

DANNY BOY HULLESS POP CORN

Manufacturer.—The Albert Dickinson Company, Chicago, and Minneapolis.

Description.—Canned popcorn kernels with a proper moisture content for popping. The same as Dickinson's Little Buster Hulless Pop Corn (THE JOURNAL, Sept. 17, 1932, p. 997).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET - - - CHICAGO, ILL.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - Seven dollars per annum in advance

Please send in promptly notice of change of address, giving both old and new; always state whether the change is temporary or permanent. Such notice should mention all journals received from this office. Important information regarding contributions will be found on second advertising page following reading matter.

SATURDAY, APRIL 6, 1935

OBITUARIES OF PHYSICIANS PUBLISHED IN 1934

During 1934 the number of obituaries of physicians published in THE JOURNAL totaled 3,393, including 162 Canadians. The obituaries of 3,231 physicians of the United States were published, as compared with 3,209 in 1933. The total number includes also 4 each in Puerto Rico and China, 3 in the Philippine Islands, 2 in India and 1 each in Panama, Hawaii, Japan, France, England, Siam, Persia and Cyprus. The obituaries of 73 women physicians were published, as compared with 83 in 1933. Graduates of medical schools in the United States for the fiscal year ended June 30, 1934, numbered 5,038. Deducting the number of physicians whose obituaries were published, there was a net addition to the ranks of the profession for the year of 1,807.

Ages.—The average age at death of those classified as of the United States was 64.3, as compared with 64.4 in 1933. One physician lived to be 100 years old and 46 others lived to be 90 or more. There were 5 who died under 25 years of age. Twenty-four physicians died between the ages of 25 and 29, 50 between 30 and 34, 68 between 35 and 39, 88 between 40 and 44, 158 between 45 and 49, 297 between 50 and 54, 388 between 55 and 59, 486 between 60 and 64, 495 between 65 and 69, 426 between 70 and 74, 354 between 75 and 79, 249 between 80 and 84, and 142 who were more than 85. More deaths occurred in March than in any other one month.

Causes.—Heart disease was again the leading cause of death. Some contributory causes are included in the tabulation, as they have been in former years. A report that the cause of death was "chronic nephritis and heart disease," for example, is so published in THE JOURNAL and is recorded on the statistical charts under both diseases. Of the causes of death from heart disease, endocarditis or myocarditis was specified in 326, coronary thrombosis in 137, angina pectoris in 119 and pericarditis in 1. Cerebral hemorrhage was the second most frequent cause reported, with 336 deaths; 16 additional deaths were reported as due to paralysis. Pneumonia was the third most frequent cause, lobar pneumonia having been reported in 248 cases and bronchopneumonia in 72. Fourth on the list was cancer. Of 296 deaths reported as due to cancer, the stomach and liver were affected in 64 cases, the prostate gland in 35, the intestine in 28, the buccal cavity in 4, the female genital organs in 1 and the skin in 1; in 163 cases the part affected was not specified. Arteriosclerosis caused 280 deaths and other diseases of the arteries 2; nephritis 195, of which 33 cases were specified as acute nephritis; uremia 107; embolism and thrombosis, exclusive of coronary thrombosis, 78; diabetes mellitus 66; hypertension 56; tuberculosis of the respiratory system 50, and other forms of tuberculosis 6; diseases of the prostate 40 and other diseases of the genito-urinary system 46; cirrhosis of the liver 32; septicemia 30; influenza and ulcer of the stomach each 25; appendicitis 20; peritonitis and intestinal obstruction 17; gangrene 14; leukemia 13; pernicious anemia 11; cholecystitis, erysipelas and paralysis agitans 10 each; brain tumor, heat prostration and meningitis 9 each; encephalitis and streptococcic infection 8 each; agranulocytic angina and Hodgkin's disease 7 each; asthma, biliary calculi and hernia 6; aneurysm, diverticulitis and mastoiditis 5 each; cellulitis and pleurisy 4 each; chronic bronchitis, empyema, osteomyelitis, otitis media and toxemia 3 each; carbuncle, diphtheria, dysentery, emphysema, esophageal varix, dementia paralytica, other diseases of the nervous system, goiter, Ludwig's angina, myelitis, pellagra, sprue and typhus 2 each. Among other unusual causes of death given for one case each were acute septic arthritis, acute toxic neuritis, alcoholism, Alzheimer's disease, amebic dysentery, anaphylaxis, arsenic poisoning, blackwater fever, cerebral hyperemia, cholangeitis, diverticulum of the esophagus, exhaustion and exposure, food poisoning, furuncle, glaucoma, traumatic ileus, Korsakoff's syndrome, Landry's paralysis, malaria, therapeutic malaria, malnutrition, morphine poisoning, multiple myeloma, multiple sclerosis, muscular atrophy, myasthenia gravis, paratyphoid, parotitis, pemphigus, polyneuritis, Raynaud's disease, retrovesical fistula, scarlet fever, sinusitis, thrombo-angiitis obliterans and tularemia, typhoid, and x-ray burns.

Accidental Deaths.—One hundred and forty-one physicians died as the result of accidents in 1934, compared with 158 in the previous year. Automobile accidents accounted for 69 deaths, 6 less than in 1933. In 1934, deaths from falls numbered 35, the second largest number due to accidental causes. Ten deaths were caused by drowning, 6 by shooting, 4 by burns, 3 by overdoses of medicine, and 2 each by gas, airplane accidents and street car accidents. Three physicians died in the *Morro Castle* disaster. One died of carbon monoxide poisoning and 1 of x-ray burns, 1 was crushed by an elevator and in 2 cases the nature of the accident was not specified.

Suicides and Homicides.—Suicide was the cause of 75 deaths in 1934, 5 more than 1933. Shooting accounted for 44 of these deaths, poison for 9, hanging for 6, gas and cut artery 3 each, jumping and carbolic acid 2 each; strangulation, carbon monoxide and stabbing with a surgical instrument 1 each. In the remaining cases the method was not reported. There were 6 homicides by shooting.

Positions.—Among the decedents were 174 who were or had been teachers in medical schools, 353 who served in the World War, 31 veterans of the Civil War, and 54 veterans of the Spanish-American War. One hundred and twenty-two had been health officers, 85 members of boards of education, and 50 members of boards of health. There were 48 coroners, 45 mayors of municipalities, 32 members of state legislatures, 21 members of state boards of medical examiners, 19 members of the U. S. Army Medical Corps, 7 of the U. S. Navy Medical Corps, and 9 of the U. S. Public Health Service. Twenty-eight authors, 22 druggists, 16 bank presidents, 15 members of city councils, 11 missionaries, 9 editors, 7 dentists, 7 lawyers, 5 postmasters, 2 clergymen, 2 judges, 2 justices of the peace and 1 lieutenant governor were included.

Association Officers.—The obituaries published in 1934 of physicians who were or had been officers of the American Medical Association included 2 past presidents, 2 trustees and 9 section officers. Twenty-eight members or former members of the House of Delegates died during the year. Twenty-one presidents or former presidents, 1 president-elect and 5 secretaries of state societies were included among the officials.

CALIFORNIA MEDICAL SOCIETY ENDORSES SICKNESS INSURANCE

Following the session of the House of Delegates of the American Medical Association in Chicago in February, a meeting of the house of delegates of the California Medical Association was held in Los Angeles on March 2. A special committee of five, appointed by the house of delegates of the California Medical Association in 1934, submitted a report of a survey of health care in California and a plan for the administration of health insurance. This committee, with an advisory council, had made the survey, which involved a study of medical practice as conducted by physicians, dentists, osteopaths, hospitals and clinics, and a direct study of the health care of the public obtained through 48,000 questionnaires secured from families by field workers and by mail. The cost of the survey was approximately $80,000, of which some $25,000 was supplied by the California Medical Association and the remainder through an appropriation by the government.

The committee of five rendered a majority report signed by four members to the effect that health service be furnished on a voluntary basis. In accordance with the instructions of the California house of delegates given in 1934, the committee prepared a health insurance bill but recommended that it be not adopted. At the same time Dr. Alson R. Kilgore presented a resolution that the California Medical Association establish an organization for the specific purpose of providing means whereby the cost of care of sickness and injury for those of moderate and low incomes may be met by the method of periodic payments in advance, that this organization provide for meeting costs of professional service and hospital care, and that the council of the society perfect a plan of organization for these purposes. Subsequent provisions requested the inclusion in such plans of the free choice of physician, dentist and hospital, and maintenance as far as possible of the traditional patient-physician relationship. It was also requested that the plan be developed so as to operate without profit to any one. After considerable debate, both these reports were referred to a reference committee.

Following this statement, Dr. Rodney A. Yoell presented a minority report recommending that the house of delegates of the California Medical Association endorse the principle of compulsory health insurance, submitting with this recommendation a bill in support of the plan with the idea that this bill be the basis of discussion of the California Medical Association with the senate interim committee of the California legislature. This also was referred to the reference committee.

The council of the California Medical Association submitted to the house of delegates six questions as to the point of view of that body in relationship to medical practice in California and also presented some resolutions, which were referred to a special reference committee. These resolutions concerned the relationship of the medical association to the county hospital, the corporate practice of medicine and compensation for medical service rendered to those on relief. After extended discussion the house of delegates approved submission to the legislature of a bill providing for both compulsory and voluntary sickness insurance, leaving it to the council and legislative committee of the association to work out the proper measures with the legislature.

In considering these actions of the house of delegates of the California Medical Association, it should be realized that there are already before the California state legislature bills legalizing the practice of medicine for profit by corporations and bills providing care in county hospitals in that state to all who apply for admittance regardless of their ability to pay, and that the federal and the state emergency relief administration in that state have been unable to work out a satisfactory plan of medical care for those on relief with organized medicine and the allied professional groups. This state of affairs may have been significant in the action finally taken. However, California seems to have been tending toward a compulsory sickness insurance

system. Much depends on whether or not the medical profession after its conference with representatives of the legislature will be able to develop some system that will be satisfactory to all concerned.

The proposed legislation submitted by Dr. Rodney Yoell in connection with his individual minority report seems to follow closely the Epstein scheme of health insurance, with the exception that the proposed bill provides for control under a director who must be a physician and a health insurance commission of five, of which two members must be physicians.

The action taken does indicate, moreover, that the majority of the house of delegates of the California Medical Association favors a system of sickness insurance including both the compulsory and voluntary forms.

PROLONGED SLEEP AND PATRICIA MAGUIRE

For some time newspapers have been recording the gradual changes that have taken place in a girl, Patricia Maguire, who was apparently infected some years ago with epidemic (lethargic) encephalitis and who has since that time been passing through a prolonged period of somnolence.[1] In February 1932 she found herself unable to stay awake. The tendency to sleep increased. Gradually diplopia and other eye changes occurred. Eventually the diagnosis of epidemic encephalitis was made. No doubt because she had been previously connected with a local newspaper, her case has been regularly discussed in the press of Chicago and from time to time items have been widely republished by newspaper syndicates. Incidentally, it is a well established fact that the publication in newspapers or the announcement over the radio of extraordinary cases, particularly when there is a romantic interest, brings to the persons concerned not only a vast correspondence from cranks but also offers of free treatment by innumerable charlatans who wish to advertise themselves, as well as quantities of foods, drugs, physical therapeutic apparatus and gifts in money. It is also known that certain types of news suddenly develop extraordinary vogue. At present there are being widely publicized in the press cases of "upside down stomachs," cases of absence of bones from the limbs, cases of operations on the heart, and similar extraordinary instances. Moreover, the headquarters office of the American Medical Association is actually being besieged at this time with telegrams, telephone messages and letters with regard to the possible exploitation of additional cases.

Long periods of somnolence are not altogether extraordinary. Some time ago Drs. Notkin and Jelliffe[2] summarized the available records of narcolepsies, representing cases not only of encephalitis but also of hypnolepsy, multiple sclerosis, cerebral concussions and similar pathologic disturbances. The earliest case reported in scientific medical literature was that of Fournier in 1813. Altogether there seem to have been sixty-four cases reported up to 1931. The attacks may last from a few minutes to long periods of time. Thus Janet[3] reported a case of sleep lasting five years and associated with a loss of the sense of reality. The patient began to have periods of loss of consciousness when she was 14 years old, the first coming on during a religious ceremony. At the age of 17 she began to sleep continuously and he observed her regularly until she was 23 years of age. During the period when she was asleep she could be aroused briefly to hold conversations, in which it was brought out that she was possessed of the belief that she did not exist. At the end of the five year period she began to sit up more frequently and finally she became able to feed herself, dress herself and walk about.

Such cases are, however, quite different from that of Patricia Maguire. In encephalitis there are actual changes in the tissues of the brain associated with the infection; but her case is not unique, because many cases of encephalitis have been reported with long duration, some, in fact, being prolonged to periods much beyond that already passed in the case of Patricia Maguire. A careful reading of the report will indicate that, as in most such cases, there was but a brief period in which the patient was completely somnolent. She soon began to respond to questions and more recently has been showing signs of returning intelligence.

As is pointed out by Drs. Notkin and Jelliffe in the article mentioned previously, it is quite possible in such cases to have a combination of both physical and functional conditions. Every case should be analyzed as to the extent to which each of these elements is present. Indeed, one case that they described involved a gardener, aged 46, who began to fall asleep in 1921 while talking and eating and who gradually developed epidemic encephalitis. He was a patient in various institutions for a period of eleven years, on many occasions having long periods of somnolence. He died eleven years after the onset of the disease from a complication of infectious conditions.

No doubt there is in the study of these cases and in their discussion in the press both a morbid and a scientific interest. The scientific interest is served when the incident is first reported and the facts are made known. The morbid interest keeps such patients before the public year after year, together with endeavors to exploit the patient either for his own personal gain or for that of some outside interest. During the recent Century of Progress exposition in Chicago, attempts were made for a public exhibition of Patricia Maguire. Fortunately a sufficient sense of decency and of good taste prevailed to make this impossible.

1. Traut, E. F.: The Case of Patricia Maguire, this issue, p. 1210.

2. Notkin, J., and Jelliffe, S. E.: The Narcolepsies: Cryptogenic and Symptomatic Types, Arch. Neurol. & Psychiat. **31**: 615 (March) 1934.

3. Janet, Pierre: A Case of Sleep Lasting Five Years, with Loss of Sense of Reality, Arch. Neurol. & Psychiat. **6**: 467 (Nov.) 1921.

Current Comment

ORGANIC LIQUIDS IN HUMAN TISSUES

The identification of organic liquids in human tissues has assumed considerable medicolegal significance. A number of organic fluids of low boiling point are used in dry cleaning, as general solvents, as fire extinguishers, as anesthetics and as therapeutic agents in hookworm disease. Ethyl chloride, ethylene chloride, carbon tetrachloride, chloroform, carbon bisulphide, benzene and diethyl ether are among these substances; each is capable of producing fatal results after drinking or following inhalation of their vapors. The problem confronting the toxicologist or pathologist in cases of death due to poisoning with any of these volatile liquids is to isolate them from the organs and to establish their identity. The usual proof obtained from relying on the sense of smell is unsatisfactory and often misleading. The demand for a method for the isolation from human tissues of easily volatile organic liquids and their identification has been met by Gettler and his co-workers. By a further refinement of a technic that had previously resulted in definite proof of the presence of ethyl alcohol in normal tissues,[1] this group of New York investigators has succeeded in developing the experimental procedure [2] to include the isolation and identification of any low boiling organic liquid (95 C. or lower). The method makes use of a specially constructed microdistillation apparatus and a newly devised microrectification flask, which are described in detail by the authors. The isolated volatile liquids are identified by means of the microdetermination of the boiling point. By this technic it is possible to isolate and identify these organic liquids readily, even though the latter may be present in concentrations as low as 0.3 cc. in 500 Gm. of tissue or even lower. In the case of ether, for example, it has been possible to isolate this liquid when present in concentrations of 0.06 cc. in 500 Gm. of tissue. The unequivocal results yielded by isolation methods should be of considerable value in medicolegal cases by assisting in the definite establishment of causes of death.

1. Gettler, A. O.; Niederl, J. B., and Benedetti-Pilcher, A. A.: J. Am. Chem. Soc. **54**: 1476, 1932. Alcohol in Normal Tissues, Current Comment, J. A. M. A. **98**: 2144 (June 11) 1932.

2. Gettler, A. O., and Siegel, Henry: Isolation from Human Tissues of Easily Volatile Organic Liquids and Their Identification, Arch. Path. **19**: 208 (Feb.) 1935.

Medical Economics

ILLNESS, DEATH AND SICKNESS INSURANCE

The social function of the medical profession is to reduce the suffering from illness and postpone the time of death. The record of the fulfilment of that function is written in the steadily declining morbidity and mortality rates of modern nations and makes, perhaps, the most encouraging page in the history of the last century. Any change in the character of medical service or in the methods of giving it can rightly be tested by the effect of such change on morbidity and mortality rates. This is a test that the advocates of sickness insurance have always dodged. Their exhaustive writings give little hint of the movements in the amount of sickness or the number of deaths in relation to population under sickness insurance systems. It is with the greatest difficulty that such facts are extracted from even the official reports of institutions and governments operating sickness insurance societies.

It is notoriously difficult to compare vital statistics of various countries. The large number of unmeasurable and not comparable elements that enter into such statistics cannot but affect any such comparisons. However, there are some facts so striking in their contrast that even though all these uncertain and imponderable elements are admitted as throwing doubt on the absolute accuracy of the results, the evidence is still too strong to be controverted.

Very few studies of the amount of sickness among industrial employees have been made in the United States. Still fewer of these present their figures in such a form as to permit anything like a fair comparison with conditions under insurance systems. Some of the methods of collecting statistics under sickness insurance tend to reduce the amount of recorded morbidity, which is always the number of days during which the patient is certified as incapable of work and therefore entitled to cash relief. There is usually a "waiting period" of from three to five days before cash payment begins. Such short time illnesses are not recorded under insurance, although they are often counted in the studies of American conditions. There is also a limit to the length of time that cash relief is granted—usually about twenty-six weeks. Any days in excess of this period are also excluded from the computations of days of sickness under insurance. Against this it is urged by the advocates of insurance that a certain amount of malingering by those who wish cash relief is inevitably included.

There are no morbidity statistics extending over a sufficient number of years in the United States to determine whether the average amount of individual illness is increasing or decreasing under the system of medical care practiced in this country. It is known that the mortality rate is steadily decreasing and that the rate of decrease has been most rapid in such diseases as typhoid, smallpox, tuberculosis, malaria and similar illnesses in which the period of disablement is apt to be very long. It is also known that each death from one of these diseases is usually accompanied by from five to ten survivals, ordinarily after an extended illness. It would seem, therefore, that the reduction in the death rate from these diseases must be accompanied by a reduction from five to ten times as great in the morbidity.

The United States Department of Commerce has published comparative mortality statistics for various nations.[1] The significant thing about this study of mortality rates is that they show a continuous and fairly regular decline in all modern nations and that there is no definite correlation between the rate of decline in insurance and noninsurance countries or in the period before and after the introduction of insurance in any one country. The progress of scientific medicine and public health, sanitation, higher wages and improved housing have reduced death rates in all modern countries, although nowhere can the introduction of sickness insurance be definitely shown to have influenced the rate of this reduction.

There are at least three different ways in which morbidity statistics are collected that may form the basis of comparison, although in none of these are the conditions of collection and compilation sufficiently uniform in different countries to insure any absolute accuracy of comparison. These three, which will be used in this discussion, are:

1. Percentage of persons reporting disabling sickness annually.
2. Average days of disability of individuals in complete coverage.
3. Average days of disability of individuals disabled.

Most of the statistics gathered in the United States are for industrial establishments having some form of cash benefits. This at once makes difficult a comparison of private and insur-

1. Mortality Statistics, 1927, United States Department of Commerce, 1930, p. 33.

ance medical practice, exaggerates the amount of illness and leads to a steady increase in the amount of recorded illness. The United States Public Health Service has compiled a table showing "frequency of specified disease groups which caused disability for eight consecutive days or longer in a group of male industrial workers employed in different industries for the years 1921 to 1928." [2] In 1921 the number of cases per thousand men was 9.9. By 1928 it had risen to 11.34.

The nearest comparison that can be obtained with conditions under insurance in Germany is from the statistics of over fourteen million members of the local sickness societies (ortskrankenkassen).[3] Here the "waiting period" is only three, instead of eight, days, which would manifestly increase the number of sicknesses. But the difference is too great to be accounted for by this, as the number of disabling sicknesses per hundred members was 58.4, or 584 per thousand, which is more than five times as great as in the United States under a system of private insurance that had already increased morbidity more than 20 per cent. If the utmost liberality is used in interpreting the difference in the number of disabling illnesses, it is certain that the morbidity of employees, measured by the number of cases of disabling sickness per employee, appears to be at least twice as great in Germany under compulsory insurance as in the United States under private insurance.

Other statistics, offering some possibility of comparison on the basis of private practice in the United States, are those collected by the Committee on the Costs of Medical Care.[4] These included the entire population of the group studied from birth to old age. Among this group "the average disability was 16.4 days per illness involving any disability." Since the percentage of disabling illness is greatest in infancy and old age [5] and the figure of 16.4 days includes all illness of whatever duration, while insurance statistics exclude those with less duration than the "waiting period" before cash benefits are given and those extending beyond the period of cash payment, this figure is manifestly much too high for fair comparison with insurance morbidity. The same criticism applies to comparison with the statement that "there were 7.1 days of disability per person in the population during the survey year." [6] When only the adult population of working age is considered, the "number of days in bed per person" varies with age from 1.8 to 3.3 annually.[7] This would seem to be the most suitable figure to compare with insurance morbidity.

In Germany the average days of disabling sickness to each hundred insured was 1,381.6, or 13.8 days per member. This is about five or six times as long as for adults in the United States and nearly twice the average disability period for the entire population as estimated by the Committee on the Costs of Medical Care. It may be accepted as at least the basis of a comparison of the average efficiency of private versus insurance medical practice in reducing the period of recovery from serious illness.

The comparison with the average duration of disabling illness among those suffering such illness is even more striking. In England under insurance the "average duration of claims within the year" (for incapacity to work) in 1927 was 4.2 weeks, about 29 days for men. For married women it was 5.6, nearly 40 days and for unmarried women, 7.3 weeks, or about 51 days.[8] These figures do not include illnesses of less than four days, and all days beyond twenty-six weeks in any one case are excluded from the totals, on which the average is calculated. Some idea of the effect of the latter exclusion is obtained by adding the number of weeks for which "disablement benefit" is paid. (This disablement benefit is a lower benefit given in case of duration of illness beyond twenty-six weeks.) In 1921 the "weeks of claim to each 100 members" under regular insurance benefit was 67 for men, and for "disablement benefit" 38 weeks, or a total of 105 weeks, or 735 days. This gives an average of 7.35 days disability per insured person, about the same as the apparent average in the United States.

However, by 1927 under insurance this rate had increased to a total of 168 weeks per hundred men, or 11.76 days per insured man, annually. The rate of increase for women was far greater. The government actuary says that, comparing 1927 with 1921, the claims of men have risen by 41 per cent, of unmarried women by 60 per cent, and of married women by 102 per cent.[9]

In Germany the average duration of illness with incapacity for work among all those so incapacitated in 1885 was 14.1 days for both men and women. By 1925 the duration of illness had increased to 22.5 days for men and 28 days for women.[10] Detailed figures separating the sexes are not available for later years, but by 1931 the annual average for the total for both men and women was 28.7 days.[11]

In other words, if one is to assume that medical service is to be measured by its success in reducing the suffering due to illness among industrial workers in the lower wage class, these figures would seem to show that the medical service given in the United States is at least from two to four times as effective as that in countries with sickness insurance.

Of course such a comparison is by no means wholly justifiable. Differences in age groups, in general social conditions, in wages, in general make up of populations, and in numerous other directions make any such absolute comparison impossible of accurate statistical statement. However, the difference is far too great to be accounted for by any of these elements. The one outstanding element present in Germany and England and absent in the United States is the method of giving medical service through insurance in the European countries and the method of private practice in the United States. The conclusion would seem to be justified that the major part of the increased days of recorded sickness is to be largely accounted for by the introduction of sickness insurance.

It may be responded at once that a large portion of this difference is due to the fact that the practicing physician in the insurance systems of Germany and England is required to certify to illness and that therefore this great increase in the amount of illness is largely accounted for by malingering. Physicians in these countries, who are the only ones capable of judging the character of the illness, deny this. They admit that there is a certain amount of malingering but insist that a large proportion of this increase is due to the destruction of the will to get well by the encouragement which insurance offers to the creation and extension of disease. In other words, insurance creates a mass of disease and then aggravates this by an inefficient medical service.

It is a fair and just conclusion from all evidence available that the population in the United States which certain interests propose to include in any system of sickness insurance have today less sickness per person and recover from illness in a shorter time than those who are provided medical care through sickness insurance systems abroad. Moreover, the morbidity in the United States appears to be steadily declining, while it is increasing under sickness insurance systems. These facts are the only valid tests of the quality of medical service and justify the statement that private practice in this country is now supplying a service far superior to that which would be given under compulsory sickness insurance.

2. Brundage, D. K.: Sickness Among Industrial Employees, Pub. Health Rep. **45**: 109 (Jan. 17) 1930.

3. Statistik des Deutschen Reichs-Band 389, Die Krankenversicherung im Jahre 1929, p. 39.

4. Falk, Klem and Sinai: The Incidences of Illness, publication 26, p. 79.

5. Falk, Klem and Sinai: The Incidences of Illness, publication 26, p. 276.

6. Ibid., p. 79.

7. Ibid., p. 276.

8. Report by Government Actuary on an Examination of the Sickness and Disablement Experience of a Group of Approved Societies in the period 1921-1927, National Health Insurance, London, 1930 p. 7 (Cmd. 3548).

9. Report by Government Actuary on an Examination of the Sickness and Disablement Experience of a Group of Approved Societies in the period 1921-1927, National Health Insurance, London, 1930, p. 5 (Cmd. 3548).

10. Goldman-Grotjahn: Benefits of German Sickness Insurance, 1928, p. 61.

11. Deutsches Ärzteblatt **1**: 81 (July 15) 1933.

Association News

ANNUAL CONGRESS ON MEDICAL EDUCATION, HOSPITALS AND LICENSURE

Thirty-First Annual Meeting, Held in Chicago, Feb. 18 and 19, 1935

DR. RAY LYMAN WILBUR, Stanford University, Calif., in the Chair

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

FEBRUARY 18—MORNING

Report of the Council on Medical Education and Hospitals

DR. RAY LYMAN WILBUR, Stanford University, Calif.: This appeared in full in THE JOURNAL, March 30, page 1064.

Should the Number of Professional Students Be Restricted?

RAYMOND WALTERS, LITT.D., Cincinnati: This article appeared in full in THE JOURNAL, March 30, page 1051.

DISCUSSION

DR. HAROLD RYPINS, Albany, N. Y.: The number of medical students selected for training each year is influenced by three major factors: the demand of the public for practicing physicians, the total facilities of the medical schools for training such physicians, and the supply of students. In the forty years between 1890 and 1930, while the population of this country increased only 95 per cent, the enrolment in secondary schools increased 1,520 per cent, and their graduates 1,360 per cent. During the same period the student body of colleges and professional schools increased 660 per cent, with a rise of 770 per cent in college graduates. The enrolment in colleges and universities has increased seven times, and in secondary schools fifteen times as rapidly as the population. Just when this pressure of excessive numbers from below began to operate, it is difficult to determine. However, it could not have been very great before 1926-1927. The fact that in that year there were over 20,000 multiple applications indicates a growing feeling on the part of the 8,500 eligible applicants that entering a medical school was no longer an easy matter. Since 6,009 of these 8,500 applicants were actually enroled that year, the percentage of applicants who were rejected was only 29. The increasing percentage of applicants rejected in the succeeding years is shown as follows: In 1926-1927 the number of applicants was 8,500, and 29 per cent were rejected. In 1932-1933 the number of applicants was 12,128, and 45 per cent were rejected. From 1926 to 1933 the enrolment has increased from 6,009 to 6,595, an increase of 586, or 9.7 per cent. The increase in enrolment has, on the whole, been permitted more for economic reasons rather than because there were adequate facilities for the training of that number of students. In view of the fact that there is an apparently constant excess of approximately 100 per cent in the number of eligible applicants, this number can no longer serve as an effective guide for determining the number of students to be trained. The present load is approximately 6,500 a year, and there is evidence that this is in excess of the number which the schools can properly handle. The survey of medical schools should throw valuable light on the capacity of each school when the element of economic pressure is eliminated. A fourth way to determine the number of students to be trained is by ascertaining how much "raw material" in the form of competent students the country yields. This is difficult. However, some light is thrown on the problem by the action of medical faculties in refusing to graduate a certain percentage of the students accepted. In spite of the increasing requirements for admission to medical schools, promulgated between 1910 and 1920, and the increasing number of eligible applicants for admission to medical schools between 1920 and the present time, the total percentage of graduates in proportion to the total number of students is almost constant—approximately 22. Of 548 freshmen of the class which entered in 1911, 22.65 per cent failed to graduate, while of 6,457 students entering in 1930, 23.1 per cent failed to graduate. The fact that throughout this period there was almost a constant loss of 15 per cent before the beginning of the second year suggests that in the majority of these cases students were admitted who failed to demonstrate the ability to carry their studies to completion. Since, of the 6,457 students who were selected for the class of 1930 from 13,569 eligible applicants, 14.2 per cent failed to complete the first year satisfactorily and 23.1 per cent failed to graduate, the conclusion appears inescapable that in spite of high standards of entrance and vigorous competition the country did not in that year produce as many satisfactory students as the number admitted for training. It is reasonable to believe that a loss of 23.1 per cent under these selective conditions means that there are not enough qualified applicants and consequently that too high a proportion of unsuitable material is being accepted. It is my opinion that this competitive selection has done more than raising preliminary educational requirements to speed up and intensify the intellectual pace of the medical undergraduate. How far this reduction in numbers should be carried can best be determined when the report of the survey is before the committee. There is already substantial evidence that some schools in this country are no longer maintaining proper educational standards and that other schools have temporarily lowered their standards by taking more students than they can properly train. In the final registration of medical schools, each school should be registered for a maximum of freshmen commensurate with its facilities. Such a limitation on each recognized medical school, plus the elimination of any schools no longer able to maintain proper educational standards, will go far to decrease the total number of students to a figure roughly equivalent to the number of qualified students the country can produce. As a tentative estimate, it is suggested that by these means the total number of freshmen admitted each year in the future throughout the country would be approximately two thirds of those admitted at the present time. On the other hand, the resultant decrease in the number of those admitted who fail to complete their studies should diminish the loss in time, money and energy resulting from the present percentage of failures. Perhaps from 75 to 80 per cent of the present number would graduate.

DR. WALTER L. BIERRING, Des Moines, Iowa: The interesting survey by President Walters emphasizes that the oversupply of graduates in the different professions is a challenge to the educational forces at this time. Comparing them with the graduates in medicine, it would seem that there are other professions in which this problem gives perhaps more concern than ours. Attention should be directed to certain factors bearing on this question. It is quite evident that within a generation, probably by 1960, there will be a balance of birth and death rates. Again, by that time, or at least by 1980, the ratio will be about 1 to 690. It requires no special actuarial philosophy to determine how that will affect medical practice. I think the element that perhaps is not considered is the distribution of physicians, which certainly is a factor in the practice of medicine, more marked than in the practice of law or other professions. The study that is now being made by the Bureau of Medical Economics of the American Medical Association is going to give some information which will be most valuable, that there are communities where the ratio can be much larger and still furnish adequate medical care. It should also be remembered that there is a strong tendency toward extending medical service in many directions. It has been well mentioned that in engineering there is a marked extension into many fields of activity; so in medicine. It is hoped that there may be other opportunities for medical service that will, to a certain extent, solve this problem. There is also no question that in the regulation of specialism a certain part of the solution will be found, and that again the training of that general practitioner or family doctor who will probably carry on 85 per cent of the service required will be different. He will have a better educational background, which will bring out that quality of service to which President Walters referred. Certainly, these are the directions for the immediate future in the development of a higher grade of practicing physician, the limitation of specialism and perhaps a better study of the distribution of physicians, which will bring the solution, to a certain extent.

The History of Medical Licensure

DR. HENRY E. SIGERIST, Baltimore: This article appeared in full in THE JOURNAL, March 30, page 1057.

DISCUSSION

DR. IRVING S. CUTTER, Chicago: I shall attempt to add but a few words to Dr. Sigerist's scholarly paper in relation to medical licensure in America. The reason for the first move in New York State in 1760 is found in the preamble of the law that was passed; namely, that the community was overrun with quacks and charlatans. The preamble states that there were something like sixty practitioners of medicine or gentlemen of the faculty, as they were called, in the city and not more than five or six had been bred physicians, and by that phrase was meant had graduated from some reputable medical school. Strangely enough, the New York committee that conducted the examination contained no medical men. They were men who were the aldermen or clerks of committees of the city government, and any one of the judges could be members. So generous was the supply of quacks throughout the colonies that Samuel Sterns, a physician who practiced also in Massachusetts and Vermont, whose sister, by the way, was the wife of the astronomer Herschel, said he made a canvass of the physicians with whom he came in contact in Massachusetts and Vermont and could find only three out of some forty or fifty who possessed any copy of Rush's work, Bartman's botany, Cullom's nosology, the London Pharmacopeia or Lewis's Materia Medica, from which he concludes that "there is a very great dearth of medical knowledge in the state." When N. S. Davis wrote the delightful story about medical education that was published in Chicago just eighty-five years ago, he made a plea that medical licensure might be utterly divorced from medical teaching. He felt that medical licensure in this sense would have a check on medical teaching, largely because of the tremendous number of low grade medical schools then in the country. For many years before and after 1844 a diploma from any sort of medical school admitted to medical practice. It wasn't until the nineties that there were even twelve states that required a separate examination. In some states, all that was necessary was to file a certificate from a medical society or a medical school or from a practitioner of medicine that the individual was of good moral character. There was no other certification required. In the early nineties, Reginald Fitz, to whom we owe so much in our knowledge of appendicitis, wrote a series of articles that were published in the *Boston Medical and Surgical Journal*, giving the history of medical licensure in America. Chasing down from that I ran across some items in *Northwest Medicine* in the early nineties giving a series of questions and answers of successful candidates before state board examinations as conducted at that time. I am going to read two or three of them. "What is scrofula?" "The scrofulous diathesis is a peculiar, greasy exudation from the axilla or inside the thighs, possibly behind the ears. It has a sour, fetid and strong smell." "What are the symptoms of cardiac dilatation?" "A feeling of water in the bowels, loss of flesh. The treatment is to put the patient on a milk diet, give rectal enema and pepsiconcal food, also a nerve tonic to build up the system." Of course, the tremendous improvement between those days and the present days needs no emphasis, but lest the present members of the state boards have an undue pride of possession in their achievements, I must relate a story told by one of our graduates. He called on a state board in a neighboring state not long ago and found the chairman of the board engrossing in a large book death certificates, enumerating the causes of death. When the student asked about his position in the examination, without giving a categorical answer he said to the student, "Darn these doctors anyway. They can't write. Just look at this death certificate." And there written plainly, indeed, were the words "Bacillus aerogenes-capsulatus." The student said, "Why, that is clear. That is Bacillus aerogenes-capsulatus; that is gas bacillus." "Oh, sure," he said, and down went as the cause of death "gastritis."

The Larger Social Aspects of Medical Education

DR. WILLARD C. RAPPLEYE, New York: The sweeping changes in economic and social affairs in this country and the increasing influence and power of the government to regulate every phase of activity and policy are bound to have an important influence on the rôle that the medical profession is to play in the present and future social order. The functions to be performed by the profession and the demands that may be made on it will have far reaching effects on the character of medical education.

The primary purpose of medical education is to provide the community with properly trained personnel to carry out an adequate program of medical service. Medical care has always been a function of society. The forms that it has taken have followed closely the shifting changes in the social structure. Specialization, for example, was well recognized in Egypt in 2500 B. C. Codes governing medical practice have existed from the days of Hammurabi, whose code in 2250 B. C. prescribed the conditions under which physicians practiced and a schedule of fees they might charge. Long before the Christian era, physicians in Greece were employed by the state. In the Middle Ages the education of the physician and the methods of protecting the public from untrained practitioners were established on a basis that has seen little change for 800 years.

Even the economic and social factors of medical care with which we are so much concerned at the moment had their beginnings in antiquity. In ancient Rome, mutual aid associations existed and regulations were made for the conduct of practice and the financial arrangements of the physicians. From the very beginning two important economic aspects of medical care were recognized; namely, the uneven distribution of the financial burden of sickness and the unpredictability of its character or severity for the individual. Many devices were created to spread the financial risks involved in sickness, but the first attempt to formulate a solution on a national basis was made in the French convention of 1794. Following this a great number of societies were organized in an endeavor to provide group protection. In his imperial message to the reichstag in 1881, Bismarck outlined the responsibility of the government in relation to this whole problem. Out of his message grew the compulsory sickness insurance program of Germany, which became effective in 1883. Most leading countries of the world have now adopted some form of collective protection for sickness.

In every country in which provisions for sickness insurance have been made, the programs have been identified with the political institutions of the country. It is probably more because of this fact than any other that there is great hesitancy on the part of medical leaders to sponsor and support programs for sickness insurance here. There is a lack of confidence on the part of many people in the local political institutions as they exist in many of our communities. The real problem is to create methods of delivering medical services of a high quality to the entire population and to devise programs by which the quality of that care may be continued. The danger in most schemes developed by lay and political groups is that the quality of medical care is gradually sacrificed for nominal performance and mediocrity. This has been the experience in most countries of the world. A sound program of medical care for the country cannot be maintained by graduating and licensing an excess number of physicians. An oversupply of physicians leads to unnecessary services, to a lowered quality of care, and to excessive costs because the individuals are not able to judge their needs in such a highly technical field as medicine. The Council on Medical Education and Hospitals, the Association of American Medical Colleges and the Federation of State Medical Boards are now engaged in a study of the larger objectives of medical education and a reclassification of medical schools in an effort to improve the quality of training and to bring about a further elevation of the level of practice. The great need of the country is for better, not more, physicians and for opportunities for those in practice and those who are qualified to specialize to prepare themselves adequately for their responsibilities to the public.

The public is confused by the large number of doctors who claim to be specialists whereas in reality there is a real shortage of properly trained experts in the various fields to meet the needs. Opportunities and facilities are quite inadequate for the training of a sufficient number of properly qualified specialists, although the number of hospitals in which such training may be given is sufficient if educational supervision and direction can be secured.

There are indications that there will soon be developments in graduate medical education that will be as far reaching and

vital to the public welfare as that which has been witnessed in undergraduate training the last two or three decades. Perhaps the most important factor in all these programs is the mobilization of hospital and clinical facilities, which will make the resources of these various institutions available. The extensive hospital facilities of high quality found in every section of the country offer a unique opportunity and responsibility in the field of graduate education, which at the moment is the weakest link in the medical program of the country. If wisdom is to be utilized in the formulation of a program of medical service for the country, that program must not be planned and governed only from the economic aspects or on the basis of the present economic crisis alone. Not only must a well considered program for the future provide for the distribution of the economic burden of sickness and for the preservation of a high quality of medical care, but it must also create the opportunities and incentive to attract increasing numbers of superior students to enter the career of medicine.

Most of the propaganda in this country on the social aspects of medicine have been governed largely by the experiences in Europe, where sickness insurance was really a political accident and was given its direction of development before the knowledge and facilities necessary for modern medical services existed. It probably is true that most of our population when employed do not need sickness insurance for the usual illnesses and the services of a general practitioner, which are the basic features of the European plans of social medicine. The large economic hazard is for hospital care, of which a larger proportion of professional services are those of specialists. The cost of hospital care is a large item in the total cost of medical services, but the burden from this source falls on less than 5 per cent of the population. The costs of hospital services are the largest and most unpredictable features of medical care. A plan for the adequate support of the hospitals of the country and the reasonable compensation of physicians on their staffs for the professional care of the indigent patients in their wards and outpatient services and the employment of physicians to care for the indigents in their homes, for whose care the community must assume responsibility, would go a long way to solve the economic factors of medical care in this country.

Not only does the hospital represent a base of operations for all forms of community medical service but it has a type of organization that can readily be amplified to include cooperation in home nursing and home medical service through its outpatient service and other channels, and it also has the most satisfactory type of organization to preserve high standards of professional performance. The 126,261 physicians now on the staffs of the hospitals represent a large army of doctors who are organized and for the most part ready to participate in a broad community health service and to carry on graduate medical education. Considering the entire problem of sickness, the adequate financing of hospital services alone, through funds from taxation, so-called hospital insurance, philanthropy and earnings, and the amplification of the present functions of such institutions would largely solve the most pressing economic problems of medical service in this country. There is little doubt that the country is entering a new phase of national policy characterized by collectivism, cooperative enterprise, and an increasing degree of governmental control and planning. It is not necessary that an accurate prediction should be made of the exact forms which medical services of the future are to assume. I believe, however, that a sound training in the fundamental biologic sciences must continue to be the basic preparation of the student, because the principles of those sciences undoubtedly will form the foundation of medical practice, preventive medicine and public health work of the future. The training should emphasize, however, that the methods by which these principles are to be applied in meeting the needs of individuals in the community are likely to be modified in the future. Students must be prepared psychologically and with a certain amount of special information to meet the shifting social and economic phases of medical care. It is the responsibility of physicians to mobilize their knowledge and skills so that the rich heritage from past generations may be utilized to the fullest benefit of contemporary society.

(To be continued)

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next three broadcasts will be as follows:

April 11. Sickness Insurance, R. G. Leland, M.D.
April 18. "Catarrh," W. W. Bauer, M.D.
April 25. May Day or All Year 'Round? W. W. Bauer, M.D.

National Broadcasting System

The American Medical Association broadcasts under the title "Your Health" on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next three broadcasts will be as follows:

April 9. Crying for the Moon, W. W. Bauer, M.D.
April 16. Meeting a Challenge, W. W. Bauer, M.D.
April 23. Sudden Death, Morris Fishbein, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

State Medical Meeting at Fort Smith.—The sixtieth annual session of the Arkansas Medical Society will be held at Fort Smith, April 16-17, with headquarters at the Goldman Hotel, under the presidency of Dr. Fergus O. Mahony, El Dorado. The program will include the following physicians:

Walter L. Bierring, Des Moines, president, American Medical Association, The Functions of the American Medical Association.
Samuel E. Thompson, Kerrville, Texas, Diagnostic Problems in Diseases of the Lungs.
William B. Grayson, Little Rock, The Problem of Malaria.
Arthur G. Sullivan, Hot Springs National Park, Use and Abuse of Digitalis.
Harvey D. Wood, Fayetteville, Vaginal Hysterectomy with the Original Pryor Clamp.
J. H. Eugene Rosamond, Memphis, Tenn., Appendicitis in Childhood.
Lucian H. Landry, New Orleans, Cicatricial Stenosis of the Esophagus.
Lee Vallette Parmley, Little Rock, Fractures About the Elbow.
Euclid M. Smith, Hot Springs National Park, Underwater Therapy in the Treatment of Chronic Arthritis (motion picture).
Merlin J. Kilbury, Little Rock, A Review of 300 Cases of Breast Tumors.
Paul A. O'Leary, Rochester, Minn., Types of Neurosyphilis Benefited by Malaria Therapy.
Ralph Bowen, Oklahoma City, Practical Management of the Asthmatic Child.
Ralph A. Reis, Chicago, Recent Advances in Gynecology.
Herbert Fay H. Jones and Thomas Duel Brown, Little Rock, Further Studies in Prostatic Resection.
Frank P. Hardy, Center Hill, Hysteria in General Practice.
Howard A. Dishongh, Little Rock, Undulant Fever.
Robert H. Hood, Russellville, Management of Pertussis.
George V. Brindley, Temple, Texas, Cancer of the Rectum: Factors Affecting Its Cure (motion picture).
John M. Smith, Russellville, Goiter (motion picture).
Ernest Harl White, Little Rock, Bandl's Ring.
Oscar J. T. Johnston, Batesville, Femoral Hernia with Unusual Contents.
Matt S. Dibrell, Van Buren, Malaria.
Pat Murphey, Little Rock, Vertigo.

An evening session will be addressed by Dr. Bierring on "The Doctor and Plans for Economic Security," and Mrs. Rogers N. Herbert, Nashville, Tenn., president, Woman's Auxiliary, American Medical Association, "The Woman's Auxiliary and the Medical Profession."

COLORADO

Bills Introduced.—H. 634 proposes to require all applicants for licenses to practice any form of the healing art, before presenting themselves to their respective professional boards for examination, to pass examinations in anatomy, physiology, chemistry, bacteriology and pathology, to be given by an impartial board of examiners in the basic sciences. The members of the board of examiners in the basic sciences are to be selected because of their knowledge of the basic sciences and each member is to be on the faculty of the University of Colorado, the Colorado State Agricultural College, the Colorado School of Mines, or some other institution of learning in the state of equal rank. No member of the board is to be engaged in the practice of the healing art during his term of membership. H. 949 proposes to reorganize and consolidate the public

health agencies of the state and counties by establishing a state department of health, county boards of health and local health districts. H. 668 proposes to create a board of examiners of drugless physicians and to regulate the practice of drugless physicians. "Drugless Physicians' practice" is defined as "the Science locating and removing interference with nerve transmission, and freeing the Human body of abnormal conditions, and the employment and practice of Physio-Therapy, Electro-Therapy, Naturopathy, and Hydro-Therapy, Neuropathy, Machano-Therapy [sic], Manipulation, and such other drugless practice including Hygienic and Sanitary measures necessary to such practice." Such licentiates are not to be permitted to practice surgery or to administer drugs, but they are to be permitted to make and sign birth and death certificates.

DELAWARE

Bill Passed.—Substitute for House 310 has passed the House. It purports on its face to amend the law requiring the payment of certain occupational taxes. It requires that before a person engages in any "service" occupation listed in the bill he apply to the clerk of the peace for a license to do so and pay an annual fee of $10.50. The bill then provides that "every individual . . . who shall procure . . . a service occupation license shall be authorized and empowered during the term for which such license was granted, to exercise and carry on such service occupation. . . ." Before a physician or an osteopath may procure this occupational license he must be "qualified under the law of the State to practice." A chiropractor, however, *need not be qualified under the laws of the state to practice* before applying to the clerk of the peace for an occupational license, but when he obtains his occupational license, without proving in any way his moral fitness or other qualifications, he seems under this bill to be fully authorized to practice, so long as the occupational license is in force.

DISTRICT OF COLUMBIA

University News.—Elmer V. McCollum, Ph.D., professor of biochemistry, Johns Hopkins University School of Hygiene and Public Health, Baltimore, delivered the fourth lecture in the Smith-Reed-Russell series at George Washington University School of Medicine, March 5; his subject was "The Rôle of the Vitamins in Relation to the Bodily Resistance to the Infectious Diseases."

Medical Bills in Congress.—S. 2013 has been reported to the Senate, directing the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue a license to practice the healing art in the District of Columbia to Dr. Pak Chue Chan (S. Rept. 390). S. 2153 has been reported to the Senate, providing for the prevention of blindness in infants born in the District of Columbia (S. Rept. 391).

ILLINOIS

Bills Introduced.—H. 676, to amend the workmen's compensation act, proposes that an employee suffering a hernia as a result of an industrial accident have the right to choose either suitable mechanical correction or surgical treatment. If he chooses mechanical correction, he is to be permitted to decide what mechanical appliance and service shall be furnished him and the employer must furnish the appliances during the employee's lifetime. However, within ninety days after the employee has selected mechanical appliances he is to be permitted to revoke his selection and elect, at his employer's expense, to submit to surgery. H. 692, to amend the medical practice act, proposes, in effect, to require the department of registration and education to appoint a committee of osteopaths to examine "the medical practitioners who practice osteopathy and . . . the medical practitioners who practice both osteopathy and medicine in all of its branches."

Chicago

Northwestern Faculty Presents Program.—Members of the faculty of Northwestern University School of Medicine presented the program before the Chicago Medical Society, March 27. Drs. Merritt Paul Starr discussed "Studies of the Thyrotropic Pituitary Hormone"; Michael L. Mason, "Immediate Treatment of Injuries"; M. Herbert Barker, "The Blood Cyanates in Cyanate Therapy of Hypertension," and Charles Marshall Davison, "An Evaluation of the Relative Merits of Cholecystectomy versus Cholecystostomy."

Corporate Practice of Medicine Illegal.—A corporation cannot legally practice medicine in Illinois, even though it assumes to do so through physician-employees, according to the decision of Judge M. L. McKinley, of the Superior Court, Cook County, March 22, in the case of *People of the State of Illinois, by Otto Kerner, Attorney General,* v. *United Medical Service, Inc.* The United Medical Service, Inc., has been holding itself out to the public as undertaking through the agency of physician-employees to give medical service. The attorney general instituted suit to require it to show its authority for doing so. Judge McKinley's decision holds that the activities of the corporation are illegal. He entered a judgment ousting the corporation from "the franchise, occupation and business" of engaging in the diagnosis and treatment of human ailments. The corporation will appeal to the Supreme Court of Illinois. Pending the determination of the appeal, the judgment of ouster will stand suspended.

Judge Holland Imposes Minimum Sentence on Quacks.—The Illinois State Department of Registration and Education has been conducting an investigation of some alleged quacks with regard to violations of the state medical practice act. Among those investigated were:

"Doc" J. B. Adams, 162 North State Street.
"Dr." George Leo Curran, 334 South Clark Street.
Mrs. Mary Dunn, 233 West Adams Street.
Mrs. Rose Parker, 2531 West Monroe Street.
"Madame" L. B. Colay, 2937 Ellis Avenue.
"Rev." Frederick J. Harris, 3014 Lake Park Avenue, who, it is reported, said: "I've healed many a person with cancer and tumors, or diabetes, or paralysis, after the doctors gave up hope for them."
James P. O'Donovan, 1203 North Dearborn Street.
Yogi Roy, 2110 North Clark Street.
"Dr." Robert A. De Lisle, unlicensed chiropractor, who is said to have been fined $150 in San Diego, Calif., in 1925, and placed on probation for one year, on a charge of practicing medicine without a license.

The investigation has resulted in the trial and conviction for practicing medicine without a license of James P. O'Donovan, Frank H. Vloek and Yogi D. Roy, each of whom was assessed a fine of $100 and costs. The futility of endeavoring to stop quack practices by imposing the minimum penalties provided by law was expressed in an editorial in the Chicago *Tribune,* March 26, in part, as follows:

Recently Muncipal Judge Eugene J. Holland completed the trials of three quack doctors, brought before him by the state department of registration and education, and imposed upon them the minimum penalties provided for practicing medicine without a license—fines of $100 each.

After pronouncing the minimum sentences (which the defendants are appealing) Judge Holland had the temerity to praise his own findings as "deterrents to the continued illegal practice of medicine." They were no such thing. The publicity given the activities of the three fakers may have warned the public against them, but the judge had nothing to do with that.

His fines merely have the effect of declaring the state in on the illegal and shameful profits of the trio. They smack of the hypocritical practice which some communities have of fining their prostitutes and gamblers at regular intervals, thus collecting an extralegal license fee on illegal business.

IOWA

Personal.—Dr. Walter A. Sternberg, Mount Pleasant, has been appointed a member of the state board of health, succeeding Dr. Nathaniel M. McKitterick, Burlington, resigned.

Bill Introduced.—H. 428 proposes to create a state board of eugenics which may, on the application of the patient or his guardian, authorize sexual sterilization if there are "reasons to believe that reproduction or further reproduction . . . would produce offspring which because of physical or mental unfitness would become a burden or menace to the State."

Society News.—At a meeting of the Southwestern Iowa Postgraduate Society in Shenandoah, February 13, speakers were Drs. H. Winnett Orr, Lincoln, Neb., on "Diagnosis of Rare Back Injuries"; Arbor D. Munger, Lincoln, "Problems in Prostatic Disease," and Erwin J. Gottsch, Shenandoah, "True Surgery of Gas Gangrene Infection." —— Dr. Emil Novak, Baltimore, addressed a special meeting of the Des Moines Academy of Medicine and the Polk County Medical Society, March 14, on "The Endocrine Aspects of Sterility." Speakers before the society, February 26, included Drs. Harry C. Willett on "Verruca—and a Review of the Therapy"; Harry A. Collins, "Postoperative Atelectasis," and David M. Blum, "Food Allergy in Relation to Migraine and Abdominal Symptoms."

KANSAS

Society Changes Name.—At a meeting in Norton, in February, the name of the Decatur-Norton County Medical Society was changed to the Northwest Kansas Medical Society. Dr. Charles F. Taylor, Norton, newly elected president, discussed diagnosis of tuberculosis. Two papers were presented by Dr. Charles O. Giese, Colorado Springs, Colo., on "Pneumothorax in Lobar Pneumonia" and "Primary Carcinoma of the Lung." Tuberculosis was also discussed by Dr. Phillip Cohn, Norton.

Society News.—At a meeting of the Wyandotte County Medical Society, March 6, Drs. Paul M. Krall and Fred E.

Angle, Kansas City, discussed electrocardiography in myocarditis and arrhythmias, respectively.—Dr. Thomas G. Orr, Kansas City, Mo., discussed "Treatment of Intestinal Peritonitis" before the Sedgwick County Medical Society, March 5.

LOUISIANA

Tuberculosis Institute.—Sponsored by the Tuberculosis and Public Health Association of Louisiana and the Tuberculosis Committee of New Orleans, a tuberculosis institute was held, March 29, in New Orleans. In the evening the session was combined with a special meeting of the Orleans Parish Medical Society; speakers were Drs. Jay Arthur Myers, Minneapolis, on "The Evolution of Tuberculosis in the Human Body," and Gunnar Nystrom, professor of surgery, University of Upsala, Sweden, pulmonary embolism.

MAINE

Bill Introduced.—H. 1772 proposes to prohibit the sale or other distribution of any cosmetic preparation not registered with the department of health and welfare, in accordance with the department's regulations. The department is to be authorized to refuse to register any cosmetic preparation which in its judgment contains injurious substances in such amounts as to be poisonous, injurious or detrimental to the person.

Bill Passed.—S. 651, a redraft of S. 241, has passed the house, proposing to amend the medical practice act by authorizing the revocation of the license of any licentiate who (1) has been convicted, either within or without the state, of any crime involving moral turpitude or of any crime in the practice of his profession, (2) has been guilty of fraudulent or unprofessional conduct in the practice of his profession, (3) is addicted to the use of narcotics, or (4) has used advertising which the board of medical examiners considers to be deceptive, misleading, extravagant, improbable or unethical.

Society News.—At a meeting of the Kennebec County Medical Association in Augusta, February 21, speakers were Herbert E. Locke, attorney, Augusta, and W. T. Bovie, Ph.D., Colby College, Waterville; their papers were entitled "Some Practical Aspects of Medical Jurisprudence" and "Debt of Science to the Physician," respectively.——The Knox County Medical Society was addressed, recently, by Drs. Howard L. Apollonio, Camden, on "Fracture of the Femur," C. Harold Jameson, Camden, "Polycystic Kidney Disease," and Edwin W. Gehring, Portland, president, Maine Medical Association, "Birth Control and Disease Prevention."——Dr. Louis E. Phaneuf, Boston, discussed cervical cesarean section before the Cumberland Medical Society, Portland, February 28.

MARYLAND

Bill Passed.—H. 145 has passed the house and the senate, proposing to prohibit the retail sale and distribution of barbital and other hypnotic and somnifacient drugs except on the prescription of a licensed physician, dentist or veterinarian. The drugs mentioned are to include barbituric acid, sulphonethylmethane (trional), sulphonmethane (sulphonal), diethylsulphon diethylmethane (tetronal), paraldehyde, and chloral or chloral hydrate or chlorbutanol.

Bills Introduced.—H. 536 proposes to authorize the sexual sterilization of incurable idiots, imbeciles or morons. H. 547, to amend the osteopathic practice act, proposes to permit osteopaths to make and sign death certificates. H. 560, to amend the workmen's compensation act, proposes to define "injury" and "personal injury" [which is compensable under the act] to "include, in addition to injury by accident, occupational diseases, and any disease growing out of, incident to, or proximately caused by, the employment."

MICHIGAN

Outbreak of Streptococcic Sore Throat.—About twenty-five cases of streptococcic sore throat with one death were recently reported in Bronson. On investigation, several cows in the herd supplying the milk in question were found to have mastitis. According to the state medical journal, an encapsulated organism corresponding in every way to Streptococcus epidemicus was isolated from the milk. The organism is of human origin. It was not recovered from the throats of patients, but, the journal states, there seems to be abundant evidence to conclude that the outbreak was milk borne and caused by the hemolytic Streptococcus epidemicus. The milk was not pasteurized.

Bills Introduced.—S. 289 proposes to bring within the purview of the narcotic drug act barbituric acid derivatives and compounds, sulphonethylmethane (trional), sulphonmethane (sulphonal), diethylsulphon diethylmethane (tetronal), carbromal, paraldehyde and chloral or chloral hydrate or chlorbutanol. H. 252 proposes to prohibit the employment of any person in a state hospital for a period longer than an average of nine hours a day, or fifty-four hours in any week, or more than ten hours in any one day. H. 381 proposes to grant charitable and governmental hospitals treating persons injured through the fault of others liens on all rights of action, claims, judgments, compromises or settlements accruing to the injured persons by reason of their injuries. H. 393, to amend the workmen's compensation act, proposes, in effect, to make occupational diseases compensable. H. 401, to amend the workmen's compensation act, proposes to forbid physicians to receive for services and expenses in any case arising under the act fees in excess of 10 per cent of the amount of compensation allowed the injured workman. However, in cases in which the compensation allowed does not exceed $500, physicians' fees may not exceed 20 per cent. H. 428, to amend the workmen's compensation act, proposes that all hernias arising out of and in the course of employment shall be conclusively presumed to be accidental and that the employee be entitled to compensation for twenty weeks. If an employee accepts an operation tendered by the employer and the operation is unsuccessful, the employee is to be entitled to receive compensation as for other disability. H. 427, to amend the workmen's compensation act, proposes that during the first ninety days after an industrial injury the employer is to furnish necessary medical, surgical and hospital services and medicines to the injured employee. After the expiration of that time the compensation board is to be authorized to direct the employer to furnish additional medical, surgical and hospital services. S. 281, to amend the osteopathic practice act, proposes (1) to dub the Michigan State Osteopathic Association "the Michigan State Osteopathic Association of Physicians and Surgeons"; (2) to permit the secretary of the board of osteopathic examiners to receive such salary as may be fixed by the board and to employ such assistants and investigators as he deems necessary; (3) to raise the examination fee required of applicants for licenses to practice osteopathy to $35, and the fee required of applicants for licenses on the basis of reciprocity to $75; (4) to require osteopathic licentiates to register annually with the board and to pay an annual fee of $10; (5) to make it a condition precedent to annual registration that the licentiate has attended at least one of the two-day "education programs" as conducted by the "Michigan Osteopathic Association of Physicians and Surgeons"; and (6) to provide additional grounds for the revocation of licenses.

MINNESOTA

Bills Introduced.—S. 1319 and H. 1408 propose to authorize the county board of any county to provide for the hospitalization, in hospitals within the county or elsewhere within the state, of indigent persons afflicted with a malady, deformity or ailment of a nature which can probably be remedied by hospitalization. H. 890, to amend the workmen's compensation act, proposes to make poisoning by carbon monoxide fumes or its sequelae compensable.

Dr. Blumenthal Will Give Vander Horck Lecture.—The second annual Vander Horck Lecture of the Minnesota Dermatological Society will be delivered, April 18, by Dr. Franz Blumenthal, research professor of dermatology, University of Michigan Medical School, Ann Arbor. His subject will be "The Paradoxical Influence of the Sun's Rays on Cancer, Causative and Curative." These lectures were initiated last year in memory of Dr. Max P. Vander Horck, who died in 1911.

NEW HAMPSHIRE

Personal—Dr. Arthur W. Hopkins, West Swanzey, was guest of honor at a dinner given by the town board of education, teachers and other citizens, January 29, in recognition of his twenty-five years of service on the board.——Dr. Robert B. Kerr, Manchester, was recently appointed a member of the state board of public welfare.

Society News.—Dr. Carleton R. Metcalf, Concord, secretary, New Hampshire Medical Society, addressed the Sullivan County Medical Society, Claremont, recently, on sickness insurance.——James A. Hamilton, Hanover, chairman of the State Hospital Superintendents' Club, addressed the Merrimack County Medical Society, Concord, January 2, on hospital insurance.——Dr. Francis M. Rackemann, Boston, addressed the Belknap County Medical Society, Laconia, February 19, on cause and treatment of asthma and eczema.——At a special meeting, February 19, the Nashua Medical Society approved the action of the House of Delegates of the American Medical Association in opposing compulsory health insurance.

NEW JERSEY

Bill Introduced.—S. 313 proposes to require the board of medical examiners to examine any applicant for a license to practice medicine who (1) has attended four full courses of lectures for four years in a medical college in good standing, (2) has completed an internship of eighteen months in an approved hospital in the state and (3) has served at least fifteen years as a resident member of the staff of an approved hospital in the state.

NEW YORK

Testimonial to Dr. Ruhland.—Civic, business, professional and educational organizations of Syracuse united in giving a testimonial dinner to Dr. George C. Ruhland, health commissioner of Syracuse for the past ten years, February 18, previous to his departure to become health officer of Washington, D. C. Dr. Thomas Parran Jr., state health officer, Albany, was the principal speaker.

Bills Introduced.—A. 2332 and S. 1851, to amend the law requiring the medical inspection of all pupils attending public schools, proposes to require such inspection of every child of compulsory school age. S. 1816 and A. 2325 propose to accord to charitable and governmental hospitals treating persons injured through the fault of others liens on all claims, rights of action, judgments, settlements or compromises accruing to the injured persons by reason of their injuries.

Society News.—Dr. Roger Anderson, Seattle, addressed the Schenectady County Medical Society, Schenectady, January 18, on treatment of fractures of the lower extremities.——Dr. Margaret Warwick, Buffalo, addressed the Wyoming County Medical Society, at Greene Sanitarium, Castile, January 8, on benign and malignant tumors.——Dr. Luther Fiske Warren, Brooklyn, addressed the Suffolk County Medical Society, Patchogue, January 30, on "Differential Diagnosis Between Coronary Disease and Other Conditions."——The New York State Association of Public Health Laboratories will hold its nineteenth annual meeting at the Syracuse Memorial Hospital, Syracuse, April 29.——Dr. Roy B. Henline, New York, addressed the Broome County Medical Society, Binghamton, March 5, on urinary infection.——Drs. Edward C. Hughes, Syracuse, and James K. Quigley, Rochester, addressed the Onondaga Medical Society, Syracuse, March 5, on "Hysterotubography—An Aid in the Diagnosis and Treatment of Sterility" and "Maternal Mortality," respectively.——Dr. Samuel W. Hartwell, Buffalo, addressed the Medical Society of the County of Westchester, March 19, on "Foundations of Mental Health."——Dr. Alfred W. Adson, Rochester, Minn., addressed the Rochester Academy of Medicine, March 7, on "Intraspinal Tumors, Symptoms, Diagnostic Procedures and Surgical Management." Dr. Cyrus C. Sturgis, Ann Arbor, Mich., was the speaker, February 7, on treatment of the anemias.

New York City

Medical School Name Changed.—The council of New York University at a meeting February 25 approved the change in name of the medical school of the university from New York University, University and Bellevue Hospital Medical College, to New York University College of Medicine.

Seventh Harvey Lecture.—The seventh lecture of the current series of the Harvey Society will be delivered by Dr. Francis G. Blake, Sterling professor of medicine, Yale University School of Medicine, New Haven, Conn., April 18, at the New York Academy of Medicine. His subject will be "Pneumothorax in the Treatment of Pneumonia."

Nobel Prize Dinner.—Drs. George H. Whipple, Rochester, George R. Minot and William P. Murphy, Boston, winners of the Nobel Prize in Medicine in 1934 and Harold C. Urey, Ph.D., winner of the prize in chemistry, will be honor guests at a dinner at the Waldorf-Astoria, April 9, arranged by a committee of physicians and other civic and social leaders. Dr. Foster Kennedy will be toastmaster and other speakers and guests of honor will include:

Dr. Willard C. Rappleye, dean, Columbia University College of Physicians and Surgeons.
Dr. Eugene H. Pool, president, New York Academy of Medicine.
Dr. Arthur J. Bedell, Albany, president, Medical Society of the State of New York.
Dr. John A. Hartwell, director, New York Academy of Medicine.
Dr. William S. Ladd, associate dean, Cornell University Medical School.
Dr. Alan M. Chesney, dean, Johns Hopkins University School of Medicine, Baltimore.
Dr. Milton C. Winternitz, dean, Yale University School of Medicine, New Haven, Conn.
Dr. David L. Edsall, dean, Harvard University Medical School, Boston.

George J. Ryan, president of the board of education, is chairman of the committee. Reservations may be made in Room 594, the Waldorf-Astoria. Ladies are invited and seats are $6 per person.

OHIO

Bills Introduced.—H. 358 proposes to create a board of electrotherapy and to regulate the practice of electrotherapy, defined by the bill as "the use of any electrical, manual, thermal or mechanical measures for the treatment of disease and shall include the performing of minor surgery and the administration and use of antiseptics and anesthetics." Such a licentiate, however, is not to be permitted to use the unqualified title "doctor," "Dr.," "M.D.," "physician" or "surgeon." H. 479, to amend the workmen's compensation act, proposes to provide compensation for "any disability caused by illness or disease arising out of and which is caused by the employment." H. 495 proposes to compensate and to supply medical, nursing and hospital services to public work relief employees who are injured in the course of their employment.

OREGON

Professor Fraenkel in Portland.—Dr. Ludwig Fraenkel, professor and head of the department of gynecology and obstetrics, University of Breslau, Germany, gave a three day course of lectures and clinics in Portland, February 4-6, under the auspices of the University of Oregon Medical School and the Portland Academy of Medicine.

Alumni Meeting at Portland.—Dr. Harold Brunn, San Francisco, was the featured speaker at the twenty-second annual meeting of the alumni association of the University of Oregon Medical School, Portland, March 4-6. Dr. Brunn made two addresses, on "Pelvic Appendicitis" and "Lung Abscess." Clinics were held each morning at Multnomah County Hospital. Officers elected were Drs. Earl D. DuBois, Portland, president; Arthur C. Jones, Portland, Harvey A. Woods, Ashland, Webster K. Ross, La Grande, Christen F. Quevli Jr., Tacoma, vice presidents; Harry S. Irvine, Portland, treasurer, and Birchard A. Van Loan, Portland, secretary, reelected.

PENNSYLVANIA

Society News.—Dr. James H. Corwin, Washington, addressed the Washington County Medical Society, March 13, on "Osteolytic Sarcoma of the Leg."——Dr. John R. Moore, Philadelphia, addressed the Lehigh County Medical Society, Allentown, in March, on "Fractures of the Upper End of the Femur."

Personal.—The board of managers and the staff of Reading Hospital, Reading, gave a testimonial dinner at the Berkshire Country Club, March 20, to Drs. Irvin H. Hartman and Christopher H. Shearer on the occasion of their retirement from the hospital staff and in memory of the late Dr. Ira G. Shoemaker. Dr. George W. Overholser, Reading, was toastmaster. Responses were made by Mr. J. Heber Parker, president of the board of trustees; Drs. Robert M. Alexander, Howard U. Miller, Charles P. Henry, Frank G. Runyeon, all of Reading; and Drs. W. Wayne Babcock, Arthur C. Morgan and Alfred Stengel, all of Philadelphia.

Philadelphia

Medical College News.—Wilfred W. Fry, president of N. W. Ayer and Son, was elected president of the board of trustees of Jefferson Medical College recently, to succeed the late Alba B. Johnson. Mr. Fry has been a member of the board since 1931.

Personal.—Dr. Charles H. Frazier, professor of surgery, University of Pennsylvania School of Medicine, recently delivered the Mutter Lecture at the College of Physicians of Philadelphia. Dr. Frazier's term of service at the school will terminate in July 1937.——Dr. Daniel J. McCarthy was recently appointed medical director of the Municipal Court to succeed the late Dr. John Montgomery Baldy. Dr. Baldwin L. Keyes was appointed consulting psychiatrist to the court. Both will serve without salaries or fees, it was said.

Judge Rules No Compensation for Care of Ward Patient.—Judge Frederick A. Marx, sitting in the Orphans' Court, March 22, ruled that unless there is an express agreement a hospital staff surgeon operating on a ward patient is not entitled to extra compensation. A member of the staff of a Philadelphia hospital presented a bill against the estate of a man on whom he operated in June 1934. The hospital had presented its bill and received payment. Judge Marx decided that the surgeon was acting "in line of duty" and the estate was not liable for the claim. The estate amounted to $9,364.

Society News.—At a meeting of the Philadelphia Urological Society, February 25, speakers included Drs. Orville C. King, on "Spinal Anesthesia in Urologic Surgery: A Review of 500 Cases"; Max M. Strumia and Martin J. Costello, "Bacteriophagy in Urinary Infections."——Dr. Priscilla White, Boston, among others, addressed the Metabolic Association of Philadelphia, February 15, on "The Child Diabetic."——Dr. Edward Rose, among others, addressed the Philadelphia Pediatric Society, February 12, on "Treatment of Hyperthyroidism in Children and Young Adolescents."——The Philadelphia County Medical Society devoted its meeting, March 13, to discussion of "Periodic Health Examination and Its Importance," by Drs. Francis Ashley Faught, Rudolph Bloom, Thomas M. McMillan, Edward J. G. Beardsley and Abraham I. Rubenstone.——Among speakers before the Philadelphia Academy of Surgery, March 4, Drs. John O. Bower and Nathan Ralph Goldsmith, presented a paper on "Drainage versus Drainage and Appendectomy in Acute Appendicitis with Diffuse Peritonitis" and Drs. Isidor S. Ravdin and George M. Dorrance, "Is Enterostomy of Value in the Treatment of Peritonitis?"——Dr. Horace J. Williams, among others, addressed the Philadelphia Laryngological Society, March 5, on "Otitis Media in Measles."

Pittsburgh

Society News.—Speakers at the meeting of the Allegheny County Medical Society, March 19, were Drs. Hiram D. Ritchie, on "Transurethral Removal of the Prostate Gland"; George J. Kastlin, "Early Recognition of Blood Dyscrasias by the General Practitioner"; Lester Hollander, "Observations Concerning the Hinton Test," and Henry T. Price, report of the year's work of the Allegheny County Emergency Child Health Committee.——Dr. Samuel S. Allen Jr. addressed the Pittsburgh Neurological Society, March 18, on "Intracranial Tumors: Diagnosis and Treatment."

RHODE ISLAND

Bill Introduced.—H. 714, to amend the laws relating to the practice of osteopathy, proposes that "a certificate to practice osteopathy shall confer upon the holder thereof the same rights and privileges and the same duties and obligations as the certificate to practice medicine," and that "all government regulations concerning public health shall apply equally to doctors of osteopathy and osteopathic organizations as to doctors of medicine and medical organizations."

TENNESSEE

Personal.—Dr. James M. Smyth, Camden, was appointed health officer of Benton County, January 7.——Dr. John Y. O'Daniel, Dayton, has resigned as health officer of Rhea County to go to Unicoi County in the same capacity.——Dr. Toria J. Bratten, Woodbury, has been named health officer of Cannon County.——Dr. John A. Steward has been appointed chief of staff at Erlanger Hospital and Dr. William D. Anderson, at Children's Hospital, Chattanooga.——Dr. James H. S. Morison, Cumberland Gap, has been made chief medical officer of the Veterans' Administration Facility at Johnson City, succeeding Dr. Samuel C. Nieman, who was transferred to Shreveport, La.——Dr. Frank W. Watson, Union City, was honor guest at a dinner, March 14, attended by 110 friends celebrating his completion of fifty years in the practice of medicine. Dr. Watson is a former president and secretary of the Obion County Medical Society.

State Medical Meeting at Nashville.—The one hundred and second annual session of the Tennessee State Medical Association will be held in Nashville, April 9-11, with headquarters at the Noel Hotel and under the presidency of Dr. John O. Manier, Nashville. Guest speakers will be Drs. Henry Kennon Dunham, Cincinnati; Lay Martin, Baltimore; Alexander J. Kotkis, St. Louis; Austin A. Hayden, Chicago. Among Tennessee physicians listed on a tentative program are:

Dr. Lucius C. Sanders, Memphis, Physical Reactions to Functional Disorders.
Dr. Jesse Lawrence Cochran, Jackson, Botulism.
Dr. Gideon W. Stone, Knoxville, Version: Its Indications and Advantages.
Dr. Charles Roberts Thomas, Chattanooga, Some Neurologic Manifestations of Hyperinsulinism.
Dr. John B. Haskins, Chattanooga, Extraperitoneal Pathology with Intraperitoneal Symptoms.
Dr. Milton Smith Lewis, Nashville, Management of the Occipito-posterior Position.

The Tennessee State Pediatric Association will meet, April 8, with Drs. Philip F. Barbour, Louisville, Ky., and J. Norman Henry, Philadelphia, as guests. The Tennessee Academy of Ophthalmology and Otolaryngology also will meet, April 8, with Dr. Walter S. Lawrence, professor of roentgenology, University of Tennessee College of Medicine, Memphis, as guest speaker, on "Results of X-Ray and Radium Treatment in Certain Diseases of the Eye."

UTAH

Bill Enacted.—H. 211 has become a law, repealing the laws regulating the sale, distribution or possession of narcotic drugs and enacting what apparently is the uniform narcotic drug act. The term "narcotic drug," as used in this law, includes coca leaves, opium, cannabis and every substance neither chemically nor physically distinguishable from them. A physician or a dentist, acting in good faith and in the course of his professional practice only, may prescribe, administer and dispense narcotic drugs, or he may cause them to be administered by a nurse or intern under his direction and supervision. Physicians and dentists are to keep a record of narcotic drugs received by them and a record of all such drugs administered, dispensed or professionally used by them otherwise than by prescription.

WASHINGTON

Annual Surgical Clinic.—The Puget Sound Surgical Society held its annual surgical clinic and banquet in Seattle, March 23. Dr. Verne C. Hunt, Los Angeles, conducted clinics at the King County Hospital during the day, and the banquet was held at the Rainier Club in the evening. Dr. Hunt spoke on "The Opportunities in Surgery" and Dr. Kenneth L. Partlow, Olympia, "Modern Conception of Medical Costs in Washington."

WISCONSIN

Bill Introduced.—A. 517 proposes to amend that section of the medical practice act forbidding any person not possessing a license to practice medicine and surgery, osteopathy or osteopathy and surgery to use any title or designation which represents him "as a doctor in any branch of treating the sick," by permitting a licensed chiropractor to use the title of "Doctor of Chiropractic," or "D.C."

CANAL ZONE

Society News.—Dr. Littleton O. Keen, Balboa, was elected president of the Medical Association of the Isthmian Canal Zone, recently; Dr. Joseph R. Darnall, Ancon, vice president, and Dr. James S. Simmons, Balboa Heights, secretary. Speakers at the scientific session were Drs. Arthur J. Redland, Cristobal, on "Spinal Anesthesia"; Frederick H. Thorne, Cristobal, "Cataract Extraction," and Walter F. Heine, Cristobal, "Relapsing Fever."

GENERAL

Society for Clinical Investigation.—The annual meeting of the American Society of Clinical Investigation will be held in Atlantic City May 6, instead of May 8, as listed in the column "Coming Meetings" in THE JOURNAL, March 30, page 1190.

Society News.—The American Heart Association will hold its eleventh scientific session at the Hotel Claridge, Atlantic City, June 6. The program will be devoted to various phases of cardiovascular disease.——At the recent annual meeting of the Clinical Society of Genito-Urinary Surgeons in Cleveland, February 22, Dr. John H. Cunningham Jr., Boston, was elected president; Dr. Frank Hinman, San Francisco, vice president, and Dr. Henry G. Bugbee, New York, secretary.

News of Epidemics.—Closing of schools because of scarlet fever was reported in Elmore, Ohio; Elderton, Pa., and Avilla, Ind., among other places.——Measles was reported to be widespread in Pennsylvania. Two thousand pupils were reported absent from Scranton schools, February 25, principally because of measles; 1,501 cases occurred in Altoona during February. Newspapers reported, March 21, that Michigan had had 12,222 cases since the first of the year and 3,447 during the week ended March 16. In Kansas the state health department listed 1,492 cases during the week ended February 23.——Three hundred homes were quarantined in Reading, Pa., during the last two weeks of February, principally because of mumps, the Reading *Eagle* reported, March 1. Eighty cases were reported in Portland, Ore., for the week ended March 9.

American Students in Italian Schools.—Dr. Harold L. Rypins, Albany, N. Y., chairman of a committee on foreign medical students representing the Council on Medical Education and Hospitals of the American Medical Association, the Association of American Medical Colleges, the Federation of State Medical Boards of the United States, the National Board

of Medical Examiners and the Board of Regents of the University of the State of New York, issues a warning to American students who go to Italy to study medicine without approval from authorities in this country. The Royal Italian consul general has informed Dr. Rypins that several students have gone to Italy in the past year without approval and have been refused admission to Italian schools, in accordance with an agreement entered into Aug. 3, 1933, by Dr. Rypins, representing the New York State Board of Medical Examiners and the Federation of State Medical Boards of the United States. Some of the applicants had only high school diplomas. Prospective students are therefore warned not to go to Italy in expectation of studying medicine without obtaining authorization from the Italian consul general.

Medical Bills in Congress.—*Changes in Status:* S. 883 has passed the Senate, directing the retirement of acting assistant surgeons of the United States Public Health Service at the age of 64 years. S. 2024 has passed the Senate, authorizing the President to designate Col. William L. Keller, Medical Corps, U. S. Army, on his retirement from the active list, as consultant in surgery at the United States Army Medical Center. *Bills Introduced:* H. R. 6984, introduced by Representative Welch, California, proposes to confer on certain persons who served in the Quartermaster Corps or under the jurisdiction of the Quartermaster General during the War with Spain, the Philippine Insurrection or the China Relief Expedition the benefits of hospitalization and the privileges of the soldiers' homes. H. R. 6995, introduced by Representative Smith, Washington, proposes to reenact all laws granting pensions to veterans of the Spanish-American War, including the Boxer Rebellion and the Philippine Insurrection, their widows and dependents, that were in effect on March 19, 1933. H. R. 7122, introduced by Representative Dunn, Pennsylvania, proposes that the federal government shall grant pensions to certain blind persons in the United States. H. R. 7133, introduced by Representative Werner, South Dakota, proposes to authorize the erection of an addition to the existing veterans' administration facility at Hot Springs, South Dakota.

Changes in Status of Licensure.—At a recent meeting of the California Board of Medical Examiners in Los Angeles, the following actions were taken:

Dr. Stanley Boller, Los Angeles, found guilty, February 6, of narcotic dereliction; placed on probation for five years, during which time he shall not apply for or have a federal narcotic permit or have narcotics in his possession.

Dr. Brandon A. T. Bowlin, Pasadena, found guilty, February 6, of narcotic dereliction and placed on probation for three years, during which time he shall not have or apply for a federal narcotic permit or have narcotics in his possession.

Dr. Ethel L. Leonard, Los Angeles, found guilty, February 6, of narcotic dereliction and placed on probation for five years, during which time she shall not have or apply for a federal narcotic permit or have narcotics in her possession.

Dr. Louise Patterson, Santa Monica, found guilty, February 7, of a charge of using a fictitious name in her practice, and her license to practice in California suspended for two years.

Dr. William T. Schwabland, South Pasadena, found guilty, February 6, of using a fictitious name and his license to practice in California suspended for one year.

At a meeting of the Missouri State Board of Health, Dec. 17, 1934, the following action was taken:

Dr. Milo E. Hartman, Kansas City, license revoked "because of his dishonorable and unprofessional conduct and because of his unfitness to practice medicine and surgery in the state of Missouri."

The Minnesota State Board of Medical Examiners recently took the following action:

Dr. James O. Cavanaugh, Chanhassen, license revoked, February 9, because of a conviction of violating the Harrison Narcotic Act.

Dr. Clayton Eugene May, Winona, license revoked, February 9, because of conviction of a felony and a crime involving "moral turpitude."

The Virginia State Board of Medical Examiners recently reported the following actions:

Dr. Chester Arthur Hutchinson, Appalachia, license revoked for unprofessional conduct and moral turpitude.

Dr. John Easterly Sproles, whose last address was Bristol, Va., license revoked for violation of the narcotic laws.

The department of public welfare of the state of Nebraska reports the following revocation of license:

Dr. Louis N. Smernoff, license revoked as of Dec. 18, 1934, for having performed an illegal operation. His present address is not known.

FOREIGN

Prize for Essay on X-Rays.—The David Anderson-Berry Gold Medal with a sum of money amounting to about £100 will be awarded in July by the Royal Society of Edinburgh to the person who in the opinion of the council has recently produced the best work on the nature of x-rays in their therapeutic effect on disease in human beings. The secretary of the society is James H. Ashworth, D.Sc., 22 George Street, Edinburgh 2.

International Hospital Meeting.—The fourth International Hospital Congress will be held in Rome, May 5-12. Following are the subjects of discussion announced: the hospital as a link in a systematic public health service; equipment and technical appliances of the hospital; function and protection of the hospital in times of national calamity, and importance of each main group of the hospital staff with regard to the relations of the hospital to the community. The congress will be preceded by a study trip through Milan, Turin, Genoa, Florence and Fiesole. Details of the congress may be obtained from the headquarters of the International Hospital Association, Cantonal Hospital, Luzerne, Switzerland.

Fifteenth International Physiological Congress.—Plans for the fifteenth International Physiological Congress to be held in Leningrad and Moscow, August 9-18, have been announced. The congress will meet first in Leningrad, August 9-17, go to Moscow overnight and hold its final sessions in Moscow, August 18. Prof. Ivan P. Pavlov, Leningrad, is president of the congress committee. An American delegation will sail from New York July 25 on the S. S. *Berengaria.* A stop will be made in London, where members may attend the International Neurological Congress, July 29-31, if they wish. Various tours to other parts of Russia have been arranged, of which details may be obtained from Intourist, Inc., 545 Fifth Avenue, New York. Information concerning the program may be obtained from the Organization Committee, International Physiological Congress, Main P. O. Box 13, Leningrad, U. S. S. R.

Society News.—An All-Russian Congress for Physical Therapy will be held in Odessa, August 22-25, with the following subjects for discussion: physical therapy in relation to allergy, acute infectious diseases, sequelae of injuries and the vegetative nervous system, and short wave therapy.——The third International Air Ambulance Congress will be held in Brussels, Belgium, June 11-16. The first congress was held in Paris in 1929, and the second in Madrid in 1931.——The International Association for Prevention of Blindness held a general assembly in London, April 5, during the Congress of the Ophthalmological Society of the United Kingdom, with discussions of international classification of the causes of blindness and hereditary diseases of the eye ending in blindness.——The World Federation of Education Associations will be held August 10-17, in Oxford, England.——The German Roentgen Society has erected a memorial tablet to Wilhelm Konrad Roentgen, discoverer of the roentgen ray, on Roentgen Road in the Engadine, where he spent his vacations.——The National Association for Prevention of Tuberculosis of England will hold its twenty-first annual conference at Southport, June 27-29. The subject for discussion will be "The Responsibility of the Nation Toward the Child in Respect of Tuberculosis."

Deaths in Other Countries

John James Rickard Macleod, co-winner of the Nobel Prize in Medicine in 1923, and since 1928 regius professor of physiology at the University of Aberdeen, Scotland, died, March 17, at his home in Aberdeen, aged 58. Dr. Macleod was born in Cluny near Dunkeld, Scotland, Sept. 6, 1876. On graduating from the University of Aberdeen Faculty of Medicine in 1898 he was awarded the Anderson Traveling Scholarship, and from 1898 to 1899 he studied at the Physiological Institute of Leipzig University. He was appointed a demonstrator of physiology at the London Hospital Medical School in 1900 and in 1902 lecturer in biochemistry. In 1902 he obtained a diploma in public health from Cambridge University. He was appointed professor of physiology at the Western Reserve University, Cleveland, in 1903, which position he held until 1918; then he was professor of physiology and associate dean at the University of Toronto Faculty of Medicine, serving until 1928, when he was invited to become regius professor at his alma mater. He received honorary degrees from the universities of Toronto, Aberdeen, Western Reserve, Pennsylvania and Jefferson Medical College. He was president of the American Physiological Society in 1922 and in 1925 president of the Royal Canadian Institute. He was a member of scientific societies in the United States, Canada and Great Britain and a corresponding member of German and Italian societies. From 1929 to 1933 he was a member of the Medical Research Council of Great Britain. Dr. Macleod was the author of a long list of publications on physiologic subjects, especially carbohydrate metabolism, lactic acid in the blood and the control of breathing. The work for which he was most widely known was done in association with Banting and others in the development of insulin, for which he and Banting were awarded the Nobel Prize in physiology and medicine in 1923. He was awarded the Cameron Prize of the University of Edinburgh in the same year.

Foreign Letters

LONDON

(From Our Regular Correspondent)

March 16, 1935.

The Workmen's Compensation Acts Prolong Disability

The report of a committee appointed by the British Medical Association to consider the treatment of fractures has been reviewed in a previous letter. An appendix on "Nonmedical Factors of Prolonged Disability" was not included and, because of its importance, requires a special notice. While disclaiming that a purely medical committee can have an intimate acquaintance with all aspects of the fracture problem, the committee felt that some reference was necessary to the nonmedical factors that militate against return to work. The committee points out that the workmen's compensation acts in many cases play a powerful part in prolonging disability and delaying return to work and on occasion in converting the workman into a permanent invalid. The committee freely admits that the acts are humane and beneficial. That legislation in other countries has been based on them shows that the ideas conceived in this country are sound. But the acts contain no provision for the rehabilitation of the man after injury and place no liability on him to prove that he has sought and obtained efficient treatment, while the type of monetary benefits granted under the acts are often positively harmful to the man. Three methods are adopted by employers for insuring against the liabilities imposed on them by the workmen's compensation acts: (1) through insurance companies, (2) by mutual associations of groups of employers, and (3) by individual employers. Under the first method the insurance company is not concerned with the man's recovery as such but with the settlement of his claim as speedily as possible. Measures such as those recommended by the committee to reduce the periods of incapacity in general will not necessarily be welcomed by the companies, as they must eventually involve a reduction of revenue through lowering of premiums. On the other hand, the second and third methods have not this disadvantage. The economic advantage of the insurers is implicit in the recovery and ultimate welfare of the disabled man. For this reason mutual associations and self-insured employers often find it advisable to employ their own medical officer to supervise the injured workman. An admirable scheme, recognized under the compensation acts, is under the control of a board composed partly of employers and partly of workmen. It allows for the provision of unbiased medical referees whose opinion is final and is accepted without litigation by all parties. It also arranges for lump sum payments and pensions.

LIGHT WORK

One of the main difficulties is the return of the convalescent man to work suitable for his physical condition. A man convalescent from a fractured leg will not be unfit for ordinary work one day and fit for it the next. There must be a period when he becomes fit for light work and when he would be materially benefited by it. Large employers should earmark certain forms of occupation suitable for convalescent men. But in the present industrial conditions there are almost insuperable obstacles to the provision of such light work apart from large employers. With so much unemployment today there often appears a tendency to nurse invalidity as an alternative means of subsistence.

LUMP SUM PAYMENTS

The compensation acts provide for weekly payments but also give the employer the right to commute by paying the redemption value, which is a sum fixed by the act. The employer and the workman can also agree to a lump sum, subject to the approval of the court. The lump sum form of compensation is responsible for much prolongation of disability. The prospect that a sum considerably larger than any he has been accustomed to handle may eventually be obtained if the applicant is persistent and patient enough is sufficient in many cases to deter him from seeking or even desiring to recover completely. Further, to return to work before the settlement of the claim would probably result in diminution of the amount of the lump sum. Touts from solicitors actually wait on the victims of accidents to promote litigation. It is not surprising that, until the compensation claim is settled, the workman's attention is focused on his financial prospects rather than on his restoration to full activity. The lump sum compensation should be reserved for the permanently incapacitated who have arrived at their minimum disability.

DELAYS IN SETTLEMENT

While many cases are being short-circuited by being dealt with by a medical referee, prolonged delay in settlement occurs in others. As delay has a most harmful effect on the mentality of the claimant, cases should be dealt with expeditiously. This could be done by means of a court of independent and expert medical assessors. Many cases offer no diffculty from the purely medical point of view.

Report on Mental Hospitals

The annual report of the London County Council on mental hospitals and on mental deficiency states that while the population of the administrative county of London is decreasing as the result of migration to the outer ring of Greater London there is every indication that the number of mental patients for which the council is responsible will increase for some years. This is explained by the fact that the migrants are largely young persons, which produces an increase in the average age of the remaining population, and by the increasing longevity of the population generally. Hence there is an increasing proportion of persons suffering from decay of their mental powers. In January 1934 the council had to provide accommodations for 21,813 mental patients. Some important remarks are made in the report on occupational therapy. Not until a few years ago was there any organized attempt to encourage the patients to occupy themselves in the domestic work of the hospital, in farm work or in the workshops. Recognition of the value of such occupation has led to the appointment in each of the large mental hospitals of a woman occupations officer and of a male officer in one hospital. It has been found that this innovation is a valuable aid in the difficult task of awakening interest in self-centered or listless patients and may lead to a mental improvement of which there were no previous signs. The possibility of extending occupation therapy is therefore under consideration.

The Sterilization of Women

At the Section of Obstetrics and Gynecology of the Royal Society of Medicine, an important discussion took place on the sterilization of women, including the indications, technic and legal position.

INDICATIONS FOR STERILIZATION

Mr. Victor Lack mentioned five classes of disease in which sterilization was justifiable: 1. Chronic progressive general diseases that ran a downhill course, such as chronic rheumatic endocarditis, chronic nephritis, diabetes and disseminated sclerosis. Here pregnancy was a risk to life, though in some instances it might be possible to allow the patient to have one or two children. 2. Chronic diseases with a theoretical possibility of recovery, such as tuberculosis and hyperthyroidism.

3. Mental diseases, including epilepsy. Sterilization was justifiable in a patient who had had puerperal insanity without obvious cause; also in patients with a bad family history who habitually produced defective children. 4. Repeated cesarean section and repeated severe toxemia. 5. Hereditary diseases, such as hemophilia and acholuric jaundice.

VOLUNTARY EUGENIC STERILIZATION

Dr. C. P. Blacker, secretary of the Eugenics Society, said that 45 per cent of the children of mental defectives were defective or retarded. He advocated voluntary sterilization, as the disadvantages of compulsory sterilization outweighed the advantages. In Germany, unforeseen complications had arisen from the latter.

The legal position was presented by a lawyer, Mr. Cecil Binney. Any operation performed in the interests of the patient's health or life was permissible, but apart from this sterilization might be regarded as an offense, and a person's consent was no defense against the charge of maiming. With regard to lunatics and mental defectives, the sterilization of persons who could not give consent and did not properly understand what was being proposed would be a still greater crime. Sterilization for reasons of health was always lawful; for eugenic reasons, probably unlawful; in lunatics, always unlawful unless for health reasons.

TECHNIC OF STERILIZATION

Mr. V. B. Green-Armytage demonstrated on the screen what he considered to be the best method of temporary sterilization. He mobilized the terminal inch of the fallopian tubes and with fine catgut buried the tube in a slit in the broad ligament. The technic was simple and bloodless, but care had to be taken that the vascular supply of the end of the tube was not disturbed and that no tension existed, The advantage of the method was that in the event of remarriage or altered conditions the buried end could be freed again. In many instances this was followed by pregnancy. For permanent sterilization he demonstrated a method that he devised many years ago, of much use to the eugenist, as it involved only a few days in bed and no risk or pain. He opened the uterovesical pouch through the vagina, retracted the bladder and brought the uterus down. He then excised the cornual end of each tube, sewed the cut edges, and closed the vaginal incision.

Mr. Aleck Bourne brought forward a simple technic, which he had recently developed. He cauterized the uterine openings of the tubes with a diathermy electrode, which was curved so as to follow the lateral wall of the uterus. After some initial failures he could now get both tubes occluded, as shown by the use of iodized oil. The operation was quick and safe and could be done under gas in two minutes.

Library of Orthopedic Surgery

In Liverpool, Hugh Owen Thomas laid a large part of the foundation of modern orthopedic surgery, and his nephew and pupil Robert Jones followed him. The Liverpool Medical Institution has decided to commemorate their work by forming a Hugh Owen Thomas and Robert Jones Library of Orthopedic Surgery, in which it is hoped that every phase of this subject will be represented. An appeal has been made for contributions of books and articles on the subject. These will form a nucleus of what it is hoped will become a complete orthopedic library in which the student, the postgraduate, the practitioner and the surgeon may learn all that is being done in this branch.

Refugees from the German Persecution

Lord Rutherford, who presides over the Academic Assistance Council, formed for the help of Jewish and other scientists and scholars driven from Germany by the Nazi persecution, has reviewed in the *Times* a pamphlet entitled "A Crisis in the University World," published by the council. It is an impressive record of the work done in the last two years. Of 650 scientists and scholars who have left Germany, 248 have already been reestablished in permanent positions. Facilities for continuing their studies or research in universities and other institutions have been provided for 336 of the remainder. Thus almost all have been retained within the university sphere, a magnificent demonstration of support for the principle of the preservation of learning. In only a few instances could universities use their funds for this purpose. Almost all the money has been raised by funds established by emergency academic committees in Europe and the United States. A gratifying aspect of the work is that substantial support has been received both from Jewish and from non-Jewish sources. In particular, university teachers and graduates have given generously. Lord Rutherford points out that the problem is neither in fact nor in implication a Jewish one alone and that it involves a principle demanding the support of all who believe in the freedom and security of learning. The difficult problem still remains to transfer the 366 temporarily placed scholars into more permanent positions. Many of them are engaged in subjects such as philosophy or the classics, in which the field of absorption is more limited than in the natural sciences. A majority of them are younger men and women without the international reputation that made it easier to assist their senior colleagues. Yet it is the younger group, because of its potentialities for future research, that most deserves reestablishment. The financial requirements of this work are small in proportion to its importance. One man of vision and generosity could end this crisis in university history.

PARIS

(From Our Regular Correspondent)

March 1, 1935.

Deficit in Social Insurance Budget

In an article by Dr. G. Fischer in the Dec. 23, 1934, *Concours médical*, one sees that "all is not gold that glitters" in the social insurance question in France. Although in force scarcely four years, there have already been a large number of changes in the original law and many more are in prospect. As the author of the article states, "there are many squeaks to be heard in the machine," indicating that the plan is not as easy to carry out as seemed to be the case when its authors, with the best of motives in view, first proposed the plan, shortly after the World War. Aside from the complaints on the part of the medical profession, there is much discontent among the beneficiaries on account of the complicated "paper work," as it used to be termed in the U. S. Army, or "paperasserie," as the French call the many blanks to be filled out by the bureaucrats. In addition, there is a multiplicity of procedure and loss of time incidental to the proper functioning of such an organization in a population of more than forty million people.

From the beginning of the operation of the law in the fall of 1930 to the end of 1933, the total receipts paid by all those who were assured against illness, maternity, old age and death were about $840,000,000. The government was obliged to add $205,000,000, making a total of over a billion dollars.

On the disbursement side, $185,000,000 was paid out by the agencies (Caisses de répartition) to those who were injured or ill, or to maternity cases. Another distribution agency (Caisse de garantie) paid $94,000,000 to those (above the age of 60) who were entitled to old age pensions. Finally, the costs of administration amounted to $45,000,000.

The total payments thus (to the end of 1933) amounted to $330,000,000. This does not include $630,000,000 placed in the Central Deposit Office as a reserve fund.

Of the $45,000,000 listed as expenses of management, the central bureaus in charge took 59.40 per cent, while the agencies which have the responsibility of carrying out the law received only 40.6 per cent. According to Dr. Fischer, this indicates a faulty organization, and as a result all the agencies that come in contact with the assured find their funds in a deplorable state of deficit. In order to carry on their work, some of these primary centers of distribution have been obliged to borrow from the central depositaries at a 4.5 per cent rate of interest in order to meet the claims of the assured who are directly under their supervision. When the law was first studied, the management costs were arbitrarily placed at 3.5 per cent. A survey made by the International Bureau of Labor showed even at that time (1928) that one must estimate the cost of administration to be 8 per cent of the receipts for the first five years, followed by a gradual decrease to 5 per cent. In Germany these charges vary between 7.58 and 11 per cent. In Rumania and Austria they are 7 per cent, in Sweden 9 per cent, in Switzerland 8.45 per cent, in Denmark 11 per cent and in Italy 20 per cent.

After all deductions are made in France, only a sum equal to between 40 and 50 per cent of the original amount paid in by the worker and his employer remain for settlement of claims. This amount ought to be between 80 and 85 per cent, a figure that exists in Germany, Czechoslovakia and Poland and still permits placing some of the funds in the reserves. Hence when one considers that only a sum equal to about 45 per cent of the total collected is available for distribution, it means that payment for maternity cases is quite inadequate, and for those who are obliged to be operated on the amount allowed is ridiculous.

The question that now presents itself in France is How can such a state of affairs be improved? In order to meet the costs of management, the minister of labor stated before the French house of representatives that, first, it will be necessary to fix the cost of administration at 7.5 per cent of the amount collected as premiums. Secondly, there have been organized in France recently a large number of private companies, termed "mutualités." Although their operations are under the supervision of the government, they fulfil all the objectives of state social insurance in insuring against illness, injury, maternity costs and old age. Instead of equal contributions, as in state insurance, by the employer and the employee, only the latter pays a premium. The scheme is purely voluntary and has grown so rapidly in importance that it has become a menace to the social insurance law of the government.

Eight million, or 65 per cent of those now eligible to insurance under the French social insurance law, are now paying additional premiums voluntarily to these "mutualités." Recently an additional competitor, in the form of "benevolent associations" has appeared on the field, which will again add to the number of those who want voluntary insurance as a supplementary source of indemnity, aside from their obligatory state insurance. One of the congressmen, Mr. Dorman, is of the opinion that the rapid increase in the number of adherents to these voluntary insurance societies shows that vast economies could be made in the management of the government insurance so that larger sums could be paid to those who are obligatorily insured.

Another critic of the social (state) insurance law maintains that one of the chief complaints is that it is too bureaucratic and that an effort should be made to have a more flexible, more rational and more live organization. He has even proposed that the management of the state insurance plan shall be placed in the hands of the private organizations such as the "mutualités" represent.

A defect in the French law is that payments for sickness cease at the end of six months; hence only those who suffer from ailments of relatively short duration can be cared for. That is, it covers only cases in which there are many loopholes for fraud to occur. How about syphilis, cancer, tuberculosis and similar chronic diseases, which need care for years? The result is that nearly two thirds of those who claim sickness indemnity are left uncared for. This includes 80,000 cases of tuberculosis and 5,000 cases of cancer, without counting cases of syphilis. Such an interval of six months during which indemnities are paid for illness ought to be modified. The minister of labor, whose department takes care of social insurance, proposed on Nov. 29, 1934, certain changes in the law, which include allowances for women from the beginning of a pregnancy, also that the wives and children of those called for military service should receive support in the form of allowances, and, finally, a simpler method of making payments for premiums. At present one buys special stamps. Under the new proposals these premiums could be paid by the employer in the form of checks. Also the classification should be abandoned of those who must be insured in order to avoid cases in which a worker has not paid his full dues and thus loses his right to any indemnity.

Prof. Henri Hartmann Honored

Prof. Henri Hartmann of Paris has just been elected vice president of the Academy of Medicine. This is one of the highest honors that can be bestowed on a member.

Professor Hartmann has been a guest of the American Surgical Association and his work is familiar to all surgeons who visit Paris. Although past the age of 70, he is still active as the director of the large cancer service at one of the largest hospitals here.

Suppression of Advertising in Radio Programs

The majority of radio stations in France are owned by the government and every owner of a wireless set is obliged to pay an annual fee, varying in amount according to the size of the set. There have been so many protests by these taxpayers against paying the state to be told which soap is the best or which alcoholic appetizer created the healthiest appetite that the Department of Posts and Telegraphs has ordered all advertising and paid publicity to be suppressed in the programs broadcast by the stations controlled by the government. The chief complaints were that such publicity was sandwiched in between songs or at the end of concerts, which form the chief portion of French radio programs. There may be times when American listeners would covet a holiday in France to get out of earshot of commercial announcements.

Origin of the Follicle Stimulating Factor in the Urine of Pregnancy

Two interesting cases have been reported in the October 1934 issue of *Gynécologie et obstétrique* by Reeb, Nerson and Klein of Strasbourg. During the last few years, the diagnosis of the presence of a hydatidiform mole has been diagnosed by the presence in the urine during pregnancy of a marked increase (from ten to 100 times more than during a normal pregnancy) of the follicle stimulating factor; hence it is necessary only to inject a quantity of urine from ten to fifty times less into rabbits than in the case of a normal pregnancy. Recently cases have been reported, which are quoted, in which the amount of the follicle stimulating factor in the urine in cases of hydatidiform mole was not above the normal amount or was entirely absent.

This brings up the question as to whether this hormone has its origin during pregnancy in the hypophysis or is a product of the activity of the placenta. In the first case reported by Reeb, Nerson and Klein, the patient was a primipara, aged 26, seen in the fourth month of pregnancy. The presence of a

hydatidiform mole was suspected. A total of 1.5 cc. of urine was injected at intervals during three days into a young rabbit weighing 1,600 Gm. The rabbit was killed seventy hours after the first injection. There was a marked positive reaction in both ovaries. On the strength of this result and a negative roentgenogram a diagnosis of hydatidiform mole was made and the uterus evacuated. A fetus 14 cm. in length with hydramnios and an apparently normal placenta was found. The microscopic study, however, of the placental villi revealed a picture like that seen in a true hydatidiform mole with the exception that there was an absence of vessels in the villi and of vesicular cells.

In the second case a multipara, aged 41, was seen during the fifth month of pregnancy because of frequent hemorrhages. A hydatidiform mole being suspected, 0.6 cc. of the urine was injected at intervals during three days into a young rabbit weighing 1,800 Gm. The rabbit was killed sixty-four hours after the first injection and showed a marked positive reaction in both ovaries. On account of this result and a negative roentgenogram a vaginal hysterotomy was performed and a dead fetus 16 cm. long delivered. Aside from discrete hemorrhages in the placenta, the latter appeared normal macroscopically. However, the microscopic examination revealed, as in the first case, a marked proliferation of the cells covering the villi, with many mitoses. The interruption of pregnancy in both cases was justified by the hemorrhages, the negative roentgenogram and the markedly positive Aschheim-Zondek test indicative of hydatidiform mole. In both cases the villi showed the active cellular proliferation seen in hydatidiform mole, and for this reason the authors believe that these placental changes in the presence of ordinary pregnancies and in the absence of a hydatidiform mole are responsible for the marked increase in the follicle stimulating factor in the urine.

Surgical Treatment of Gastric and Duodenal Ulcers

At the Oct. 28, 1934, meeting of the Royal Society of Medicine of Ghent, Finsterer of Vienna stated that subtotal resection of the stomach is the operation of choice in gastric and duodenal ulcer. In 363 such cases there were thirteen deaths, a mortality of 3.5 per cent.

In 920 operations for duodenal ulcer there were thirty-two deaths, a mortality of 3.4 per cent. These favorable results are in part due to the use of splanchnic anesthesia and to the method of anastomosis (Hofmeister-Finsterer technic). In 95.8 per cent of the cases of gastric ulcer, complete cure followed resection. The same was true of 94.6 per cent of the duodenal ulcer cases. Diarrhea following subtotal resection has been observed in only six cases, and even here the diarrhea was of short duration. Finsterer has never seen a postoperative secondary or pernicious anemia. In cases of gastric or duodenal ulcer perforation, the intervention consists merely in closure of the perforation by suture.

In 273 resections for gastric ulcer, microscopic examination revealed the presence of cancer in sixty-three, or 23.1 per cent. The prognosis in these cases is unfavorable. Eleven of twenty-six cases of this kind had a fatal outcome within five years. Jejunal ulcers following gastro-enterostomy should always be operated on radically. The operation should include removal of the anastomotic area, ulcer-bearing area of the duodenum and two thirds or even three fourths of the stomach. Of 168 such operations for jejunal ulcer the outcome was fatal in nineteen, a mortality of 11.3 per cent. Operation should not be delayed in cases of gastrojejunocolic fistula lest the patient die of starvation. One should operate only if there are strict indications. If one has decided, however, to operate, only radical measures should be considered.

Automobile Accidents in Paris

Visitors to France will not be astonished to learn of the large number of deaths and more or less serious injuries which the chief of police of Paris has included in his annual report for 1934. In a city like Paris, where motorcycle police and speed laws are practically unknown, one is not surprised to find that for the year ended July 1, 1934, 28,000 persons were either killed or more or less severely injured; 9,000 of these accidents were to people crossing the streets, 10,000 to occupants of automobiles and 800 to policemen. A laudable effort has been made to mark crossings for pedestrians, which ought to be respected by automobilists, but a number of accidents were the result of persons being injured while traversing these crossings.

Experimental Sarcoma Following Injection of Thorium Dioxide

Professor Roussy, director of the new Cancer Institute, and his associates Oberling and Guérin, reported some experimental work on sarcoma at the Dec. 18, 1934, meeting of the Academy of Medicine. One cc. of a solution composed of equal parts of thorium dioxide sol and physiologic solution of sodium chloride was injected every three or four days either into the peritoneal cavity (series A) or into the subcutaneous tissue (series B) of the abdominal wall of fifty white mice. Five such injections were given in the interval from June 27 to July 11, 1933. Thirty-five animals dying of various intercurrent conditions during the first ten months are not included in either series. The other fifteen died between the tenth and the seventeenth month after the injections. Eight of these fifteen presented either peritoneal or subcutaneous sarcoma.

In the first series, four out of ten mice in which thorium dioxide sol had been injected into the peritoneal cavity presented sarcomas that were typical on microscopic examination. In addition to an ascites there was a tumor mass, as large as a walnut, at times free, at others pedunculated or forming a compact mass with adjacent viscera. In addition to a principal tumor there were smaller masses on the surface of the intestine, omentum or mesentery. The microscopic picture was that of a fibrosarcoma with numerous mitoses indicative of marked cellular activity, with evidence of invasion of the liver, pancreas, stomach, abdominal wall and diaphragm. The smaller nodules were apparently primary and not metastases. These sarcomas are found where the solution is most apt to accumulate in the upper and lower abdominal regions.

In the second series the solution had been injected into the subcutaneous tissue of the abdominal wall. Four of the five mice thus injected presented typical sarcomas the size of a prune within three or four months after the injections were begun. The sarcomas invade the entire thickness of the abdominal wall and may ulcerate to such an extent that a perforation results, with hernial protrusion of the small intestine. On microscopic examination these abdominal wall experimental sarcomas show the structure of fibrosarcoma with cellular polymorphism and numerous mitoses. No visceral or lymph node metastases were ever observed. A transplantation of the sarcomas of the second series was attempted and was successful in five of fifty mice, killing four of the five mice in from three to four months. The results of a second transplantation from these four mice is still being studied.

The malignancy of these experimentally produced sarcomas is shown not only by their histologic characters but by the ability to transplant them. The only difficult point is to explain the absence of metastases, but this is often lacking in some forms of malignant neoplasms. The authors believe that these observations will prove important because they demonstrate that the use of other substances than the coal tar derivatives can result in the experimental production of malignant growths.

BERLIN

(From Our Regular Correspondent)

Feb. 4, 1935.

Reorganization of the University Instructors

Soon after the beginning of the new régime in Germany, it was announced that far-reaching changes in the personnel and the mode of instruction at the universities would be made. First came a law concerning the "emeritization" and transference of university teachers. Previously the appointment of university instructors was subject to the laws of the various *länder,* but now the reich has taken over the right. The age for retirement has been placed uniformly at 65, whereas formerly in Prussia it was 68, while in Bavaria there was no limit. The internist Prof. Friedrich von Müller performed until recently the duties of his professorship and his clinic, although considerably past 70. The professors are not, however, pensioned but "emeritized," which signifies that they continue to receive their salary undiminished (but none of the tuition money paid by students), whereas under the pension system they had received a pension that was much less than their salary. However, if the interests of the university demand it, "emeritization" in a given case may be postponed by way of exception.

The second important change brought about by the law was to abolish the ruling that fully established university instructors could not be transferred to another institution against their will. Now, at least during the operation of this law, from Dec. 13, 1934, to Dec. 31, 1937, they may be transferred without their consent to a similar chair in another German university. A professor, instead of being transferred, may be "emeritized," if the reorganization makes it seem desirable to eliminate a chair or to combine one chair with another. It is planned to allow the various universities gradually to specialize in certain fields; for example, protestant theology might be particularly developed in Marburg, and mathematics and the natural sciences in Göttingen.

Furthermore, suitable rectors, or presidents, for the administration of universities in the spirit of national socialism may be appointed. One of the first aims is to confirm the führer principle in the universities, in which the rector becomes, as it were, the confidential adviser of the minister.

Further significant changes concern the mode of appointing university instructors, through which, as is openly stated, a profound influence will be exerted over the intellectual life and the organization of the whole university system. Until recently the new appointees were, as a rule, selected from lists proposed by the faculties. These lists played an important part, being always much discussed, and if the ministry appointed any one whose name was not on the list, it frequently awakened a storm of indignation in the faculty concerned. Now a change has come about, so that in all appointments the university commission of the national-socialist party has a voice, advising the ministries in their selection of candidates and exerting a controlling influence in the final choice. This has been emphatically stressed by the head of this commission, Professor Wirz, dermatologist, of Munich. In a short time, thirty-four appointments have been made on the basis of this method. In some German *länder* the distinction between "ordinary" and "extraordinary" professors has been abolished. The main problem now is to apply principles of selection to the university instructors. A reform of the methods of appointment will not, however, suffice.

In keeping with this attitude is the new plan of habilitation (valid for the whole reich), which means provision for the testing and approval of the oncoming generation of instructors. A sharp distinction will henceforth be made between habilitation and *dozentur,* or the acquisition of the right to teach in a German university. The "privatdozent," who gave to the German university a peculiar cast, has dropped out. In place of the privatdozent there are now two titles: a new academic degree, "Dr. habil.," for which every person with a doctor's title conferred by a university faculty is eligible but which does not grant the right to teach. This title is conferred as a purely academic procedure without reference to the need of new instructors. For the acquisition of this advanced doctor's degree a habilitation paper of scientific value and a scientific discussion before the faculty are required. The rector is invited to be present. If the rector and the faculty are convinced that "the applicant is able to discuss questions pertaining to his specialty in a satisfactory manner," the committee on instruction, if it agrees, authorizes the faculty to grant the request for habilitation. Thereupon the applicant receives the aforementioned title of Dr. habil. In addition to scientific requisites, a questionnaire as to the Aryan origin of the applicant and his wife are demanded.

The second chapter, which concerns the *dozentur,* or the actual acquisition of the venia legendi, presents some entirely new aspects. The same general qualifications hold for a dozent, or instructor, as for a public official. The minister of public instruction refers the applicants, who of course must hold the degree of Dr. habil., to a suitable faculty. The candidate must first submit to a public three-day teaching test the subjects for which the faculty must choose from three subjects proposed by the applicant. The rector and the representatives of the instructors and the students are present during the test. The rector sends a report on the test to the department of public instruction. Then the applicant reports for service in the work camp and to the Dozentenakademie, or academy of instructors (THE JOURNAL, Dec. 16, 1933, p. 1980). A report on this work service is likewise sent to the department of public instruction. That department, with the cooperation of the federal minister of science, decides on the granting of the venia legendi. The question as to whether there is a need of university instructors plays a decisive part in the decision. The venia legendi, as granted, applies to all the universities of the German reich, whereas formerly it applied only to the university at which the test was held. However, removal to another university can be effected only with the consent of the minister, but a removal may be ordered by the minister without the consent of the candidate. The minister may also withdraw or restrict the venia legendi, if it seems desirable in the interest of the university. Those who had previously passed their habilitation test are immediately recognized as "dozenten," or instructors, and have the title of Dr. habil. This title is applicable also to those who no longer are teaching at a German university, provided they have previously been habilitated.

It is interesting to note what the university commission of the national-socialist party, which will exert an important influence on further developments, has said about university instructors. Professor Reiter, president of the federal board of health, has emphasized that it is the duty of the physician of the Third Reich to provide not only for the care of the public health but also for the training of the German people in a type of "thinking, feeling and doing," which will bring credit to the race from which they are sprung. The primary precondition is a biologically directed selection of university instructors and students. The decisive factors concern not only the intellectual performance but also the aptitudes, the adjustments and the world views. Any possible reactionary tendencies will be overcome. At present there is not sufficient good material to draw from in the filling of vacancies in the universities. It will require from five to six years of special training before an ideal university instructor will be available. Not until then shall we have the type of physician that is needed.

The Reform of Medical Instruction

The next goal is the reform of the course in medicine. It is expected that the necessary reforms can be introduced in the fall of 1935. It is, says Professor Wirz, the task of national socialism to create a new type of physician and a new medical profession. The old Virchow ideal of physician who considers the healing of the individual his sole task is today outmoded. The individual person stands no longer in the foreground but rather the people and the race in its entirety. The new training at the university must produce this type of physician. When the final provisions of the reforms have been announced, they will be described in detail.

The Official German Medical Report of the World War

The official German sanitary report of the World War 1914-1918, as prepared by the Heeres-Sanitäts-Inspektion des Reichswehrministeriums, has begun to be published. Volume III, which has just appeared, gives a survey of the number of persons killed, wounded and the victims of disease among the participants in the war. The number of medically treated wounds and illnesses amounts to more than 27,000,000. The details of the survey are based on the utilization of the huge mass of statistics contained in the official lists of the dead, and in the medical reports of the troops and the hospitals of the army in the field and the army of occupation. From September 1918 on, however, the reports are incomplete because of the revolutionary disturbances.

The total number of war participants in the army (exclusive of the marine and the protective forces in the colonies), up to the end of July 1918 was 13,100,000, or, if the 1900 levy, which had been called to the colors, is included, 13,300,000. During the four years of the war the average number of effectives in the army in the field and in the army of occupation was 6,372,000. Up to Dec. 31, 1933 (that is, including delayed reports), the total number of persons killed in action and dying from all causes is placed at 2,036,897. Of this number, 1,900,876 were killed or died during the war or during the border struggles in the east, 34,836 in the navy, and 1,185 in the colonies. In addition, 100,000 were reported missing, being presumably dead. The loss of human life is increased, in one sense, by the resulting diminution of births, which for the present territory of the reich is placed at 3,000,000, and at 3,500,000 for the prewar territory.

The number of persons totally blind as the result of war injuries was 2,734. The army in the field had 4,814,557 wounded men during the four years of the war.

Warning Against the Use of Dinitrophenol

On the basis of observations in other countries—particularly the United States—the federal bureau of health has called urgent attention to the dangers that may be associated with the use of dinitrophenol by persons unfamiliar with its properties. Dinitrophenol and preparations containing this substance, if used at all, should be used experimentally and only under constant observation in clinics and hospitals, especial care being taken to determine the therapeutic dosage on the basis of the body weight. The federal bureau of health will, if necessary, adopt requisite measures for the prevention of damage to the health of the population. Thus far, according to the best information obtainable, dinitrophenol is little used in Germany.

Coronary Infarcts

For years it has been known that coronary occlusion produces typical changes in the electrocardiogram. Professor Büchner and Dr. Haager studied fifty cases with the aid of Professor Weber of Bad Nauheim. The coronary arteries are connected with one another by such numerous anastomoses that only a sudden and total blocking can lead to an infarct. The blood flow through the coronary arteries, according to the research of Professor Rein, is entirely dependent on the heart performance and is controlled by the vagus. The infarct arises usually when an arteriosclerotic coronary vessel becomes thrombosed, which commonly takes place at night when the circulation has become retarded. The preferred site is the anterior branch, whereby the anterior wall of the heart, the apex and the ventral portion of the septum become infarcted. The second preferred site is the right coronary artery and leads to the infarction of the right ventricle and the posterior wall of the left ventricle. The infarction often penetrates the whole heart. Sometimes a rupture may occur. Disseminated fibrous areas are the residues of an old coronary insufficiency. If for the coronaries there is a discrepancy between heart performance and blood supply, an acute coronary insufficiency develops, which clinically often takes the form of angina pectoris. If death ensues, necropsy reveals in such a case multiple disseminated necroses over the heart. Often in aortic insufficiency the coronary circulation is damaged to such an extent by the back flow during diastole and by the low blood pressure that angina pectoris may develop.

Professor Weber spoke on the same subject. One may note in the electrocardiogram the following departures from normal: (1) lengthening of the first ventricular complex, (2) flattening, or even downward deflection of the T wave, and (3) the so-called coronary wave. The current emanating from the stimulated muscle is biphasic. If the current is led off separately from the base and the apex of the heart, the base will give an upward deflection and the apex a downward deflection. If the current is led off from the base and the apex at the same time, one gets an electrocardiogram in which the upward directed current of the base (wave S) is brought down by the initial action of the apex. In wave T the action of the base again predominates, since it begins earlier and continues longer than the action of the apex. The negative deflection of the space between waves S and T is caused by an impaired myocardium. Likewise in an attack of hypoglycemia this portion of the electrocardiographic curve becomes negative, and the result is the same whether mechanical or chemical disturbances prevent the necessary amount of oxygen from reaching the myocardium. It is important that the various leads show different changes depending on the site of the infarcts. For example, infarcts of the posterior wall are characterized by changes in the third lead. The so-called coronary wave presents itself particularly in the presence of a recent infarct. In the first and second leads one observes infarct changes in the anterior wall; in the second and third leads one notes changes in the posterior wall—infarct changes located in the base. The negative interspace between the S and the T waves does not justify any definite conclusions as to thrombosis and infarct but is often due to the action of a coronary insufficiency. Recent coronary thrombosis causes a marked drop in the T wave. It is more difficult to interpret the negative ST space in the first ventricular complex, which must result from injuries of the myocardium of various kinds. Oxygen deficiency accentuates the manifestations in the electrocardiogram. The experimental production of various degrees of oxygen deficiency constitutes an important test of heart functioning.

A Clearing House for Scientific Congresses

In the scientific congresses of the past there has been a certain lack of continuity. For this reason a central body that aims to aid in the organization of all German medical congresses and, if feasible, of international congresses, has been created. The headquarters of this central body will be in Berlin, in the Langenbeck-Virchow-Haus, where the Deutsche Gesellschaft für Chirurgie and the Berliner Medizinische Gesellschaft are likewise located. Heretofore the personnel of

the committees in charge of the organization of a given congress and of all the arrangements changed with every session of the congress. The purpose of the new central body is to serve as a clearing house of information and thus to prevent the collective positive and negative experience of the organizers of congresses from being lost.

VIENNA

(From Our Regular Correspondent)

Feb. 2, 1935.

Regulations Concerning Narcotics and Industrial Poisons

In December 1934 the minister of public health issued new regulations governing the use of narcotics and of industrial poisons. The regulations replaced dated back to 1918. The new regulations cover poisonous substances used not only for therapeutic but also for industrial purposes, and they designate particularly the substances used as narcotics. The new regulations are of especial interest to physicians, since they must be taken into account in the writing of prescriptions. Under narcotics are listed crude opium, prepared opium, opium for smoking, medicinal opium and its derivatives: morphine, heroin (diacetylmorphine), paramorfan, genomorphine, dilaudid, dicodid, eucodal, acedicon; also coca leaves and derivatives: crude cocaine, ecgonine; cannabis, thebaine and benzylmorphine. All preparations, esters or salts containing any of the enumerated narcotics are to be regarded as narcotics within the meaning of these regulations, even though prepared synthetically, diluted or adulterated. Tropacocaine is no longer to be regarded as a narcotic. With regard to the poisons that are in use in the industries, the crafts, agricultural pursuits, forestry and in the homes, no new provisions were promulgated, although attention was called to substances that contain poison and are injurious to health if not handled properly or taken internally. To this class belong ether, ammonia, lyes, plant protectors containing barium, benzene, chromic acid for batteries, creolin, phenol, compound solution of cresol, tobacco extract, and others. Narcotics may no longer be sent through the mail, so that physicians' samples must now be delivered by messengers. Physicians, veterinarians and dentists who require narcotics in the practice of medicine must keep a record of their purchases and must state how the substances were used, so that government inspectors who examine their books will understand at once to what uses the narcotics were put. The prescribing of narcotics is prohibited in the form of medicated tablets containing more than 30 per cent in powder form or more than 15 per cent in solution of any of the following substances: morphine, heroin, paramorfan, genomorphine, dilaudid, dicodid, acedicon, eucodal, cocaine, thebaine, benzylmorphine or ecgonine. Cocaine in pure substance may be prescribed only for physicians for use in medicine. In prescribing narcotics, the physician must record the following matters on the prescription blank: the kind of drug and the quantity; in the case of powders, the amount of the single dose; the directions for taking; the name of the patient, and his own signature, together with stamp. Prescriptions for cocaine and cannabis preparations may be used but once and may not be refilled. The law deals also with codeine (methylmorphine) and ethylmorphine hydrochloride, which are put in the same category as narcotics, so far as their production, their importation and exportation and the wholesale trade are concerned. Physicians having their own pharmacy need observe only the ordinary restrictions in the dispensing of drugs belonging to this group.

New Treatment for Injured Joints

At one of the recent sessions of the Vienna Medical Society, Dr. Kraus of the Surgical Clinic demonstrated a new method of treating the so frequent distortions of joints. In the past, two groups of distortions have been distinguished: the mild and the severe type. The former have usually been given little or no treatment. In the second group, fixation over a considerable period was employed, various kinds of bandages being used, particularly the plaster cast, which played an important part. Subsequent examinations in the many cases reaching the second emergency station of the Vienna General Hospital, and of 1,843 sport devotees who came to the sport consultation center of the "second clinic," gave the surprising result that a restitutio ad integrum is not secured by any method. Particularly after the use of plaster casts, one finds frequently marked vulnerability of the joints, a tendency to recurrence, loose joints, swelling and pain. Complete cures and a shortening of the period of recovery, which is of so great social importance, were rare. It was observed repeatedly that untreated patients who applied the necessary energy to overcome the severe pain and made immediate use of the injured joints recovered most rapidly and with the best results. Likewise, subsequent examinations of lacerated ligaments yielded similar results. It is well known among the working classes that cold applications effect a diminution of pain. Further researches in this direction have shown that cold anesthesia applied to the skin (ethyl chloride) produces a far-reaching desensitization of the ligamentary apparatus of the joints, and that active movements during the period of anesthesia will release a blocked joint painlessly and usually completely.

From this observation it is possible to deduce two important principles: Anesthesia of the sensitive area over a joint exerts an analgesic effect in lesions of the ligamentary apparatus, and a single interruption of the pain and of the muscle block will usually restore the disturbed function. On the basis of these considerations and observations, therefore, the following procedure was devised: After roentgenologic verification of the diagnosis, the pain point of the injured joint is determined and ethyl chloride is applied. The period of freedom from pain is lengthened by application of a cold-producing mixture (alcohol-ether-acetone-camphor). Then the patient is required to make active movements, which are continued for from ten to twenty minutes. Often a second and a third application of anesthesia is necessary. The patient is instructed to use at home compresses dipped in a 70 per cent alcohol solution, and, at the same time, to hold the joint over steam. This may be repeated from three to six times during the day. In several cases, two or three treatments after the method described are necessary in order to obtain a complete restoration of working capacity and ability to participate in sports. Thus far fifty cases have been treated by this method; namely, thirty-eight sprung joints, four medial lateral ligaments, six fingers and two distortions of the spinal column. In none of the cases was any injury of the skin observed, but it is well to oil the skin in advance. Patients who limped badly previously could leave the ambulatorium walking normally, in spite of the distortion. It must, however, be emphasized that not all cases can be treated in this manner. A considerable number of severe cases require a plaster cast, injections into the ligamentary apparatus or an operative intervention. But it is certain that the method described in many cases of this so important injury will bring a significant improvement in the therapy and a considerable shortening of the duration of the disorder.

Professor Finsterer Succeeds Professor Schnitzler

Professor Finsterer has been chosen to fill the vacancy in the surgical department of the second largest Vienna hospital. He has acquired a reputation by reason of his method for abdominal operations under local or spinal anesthesia; in fact, it is no exaggeration to speak of the Finsterer school in Vienna. He is 59 years old. His training was obtained in the Vienna clinics.

Marriages

LAMAR L. LANCASTER, Bartow, Fla., to Miss Mildred Alberta Dunn of Bogalusa, La., at Tallahassee, Fla., March 18.

HUNTER L. GREGORY, Stockton, Calif., to Mrs. Dorothy De Graff Weaver of San Francisco, February 1.

OSCAR MCLAUGHLIN of Rocky Hill, Ohio, to Mrs. Carrie Davis Eisman of Gallipolis, January 20.

BERNARD VIENER to Miss Rebecca Cohen, both of Harrisburg, Pa., at Philadelphia, March 17.

MURIEL ADELINE CASE, Wallingford, Conn., to Mr. Arthur R. Downer of Hamden, March 16.

ROBERT E. HARRIS, Brooklyn, to Miss Dorothy Clair Hussie of New York, February 9.

ROBERT J. SEMONS, Carey, Ohio, to Miss Dorothy Kemper of Cincinnati, February 25.

POWELL W. JOYNER to Miss Dorothy Marion Dunn, both of Enfield, N. C., March 9.

HOWARD C. MOLOY to Miss Elizabeth Ewart Metzger, both of New York, March 2.

SAUL A. SCHWARTZ to Miss Helen Judith Skinder, both of New York, March 16.

Deaths

Horace David Arnold, Boston; Harvard University Medical School, Boston, 1889; member of the House of Delegates of the American Medical Association, 1908-1913, and member of the Council on Medical Education, 1913-1923; member of the Massachusetts Medical Society and the American Clinical and Climatological Association; past president of the Suffolk District Medical Society; at one time instructor and professor of clinical medicine, Tufts College Medical School; dean of the Harvard University Medical School Courses for Graduates, 1912-1916, and later director; during the World War was assigned to duty at the surgeon general's office in Washington, later serving as supervisor of medical education of the army division; formerly member and president of the National Board of Medical Examiners, and member of the State Board of Registration in Medicine; at various times on the staffs of the Boston Dispensary and the Boston City Hospital; aged 72; died, March 11, at his home in Waltham.

Julius John Valentine ⊕ New York; Columbia University College of Physicians and Surgeons, New York, 1905; professor of urology, New York Polyclinic Medical School and Hospital; member of the Associated Anesthetists of the United States and Canada and the American Urological Association; fellow of the American College of Surgeons; served during the World War; on the staff of the Morrisania City Hospital; was recently decorated by the government of Venezuela for services rendered to that country; past president of the Pan American Medical Association; aged 52; died, March 11, in the New York Orthopedic Hospital, of pneumonia, following an operation.

George Hoyt Bigelow ⊕ Boston; Harvard University Medical School, Boston, 1916; health commissioner of Massachusetts, 1925-1933, and director of the division of communicable diseases, state department of health, 1924-1925; served during the World War; past president of the American Society for the Control of Cancer; since 1934 director of the Massachusetts General Hospital and the Massachusetts Eye and Ear Infirmary; director of industrial medicine and hygiene, Antioch College, Yellow Springs, Ohio, 1921-1922, and director of the Cornell Clinic, New York, 1922-1924; aged 44; was found dead, March 23, in a reservoir in Framingham.

George A. Carpenter ⊕ Fargo, N. D.; Minnesota Hospital College, Minneapolis, 1885; formerly councilor of the first district and past president of the North Dakota State Medical Association; fellow of the American College of Surgeons; served during the World War; at one time county health officer; for six years member of the school board; member of insanity board, county board of health; on the advisory board of St. John's Hospital; member of the staff of the Florence Crittenton Home; aged 72; died, February 23, as the result of chronic arthritis and heart disease.

Harry Austin Sifton ⊕ Milwaukee; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1886; fellow of the American College of Surgeons; formerly professor of clinical surgery, Wisconsin College of Physicians and Surgeons; chief of staff of Milwaukee Hospital for sixteen years; consulting surgeon to Columbia Hospital and Johnston Emergency Hospital; aged 67; died, February 27, in Phoenix, Ariz., of coronary sclerosis.

Arthur Alfred Pratte ⊕ Keene, N. H.; School of Medicine and Surgery of Montreal, Que., Canada, 1893; member of the New England Otological and Laryngological Society; past president and secretary of the Cheshire County Medical Society; chairman of the city board of health; formerly school physician, and city health officer; on the staff of the Elliot Community Hospital; aged 65; died, February 4, of coronary thrombosis.

James Monroe Witt, Waco, Texas; Tulane University of Louisiana Medical Department, New Orleans, 1885; member of the State Medical Association of Texas; past president of the McLennan County Medical Society; member of the state board of medical examiners; on the staffs of the Central Texas Baptist Sanitarium and the Providence Sanitarium; aged 84; died, February 22, of bronchopneumonia and bilateral pyelonephritis.

Ira Groff Shoemaker ⊕ Reading, Pa.; Medico-Chirurgical College of Philadelphia, 1891; past president of the Medical Society of the State of Pennsylvania and formerly councilor of the third district; past president and secretary of the Berks County Medical Society; at one time member of the school board; aged 65; for many years on the staff of the Reading Hospital, where he died, February 28, of ruptured duodenal ulcer.

William Hamilton Miller, Little Rock, Ark.; Arkansas Industrial University Medical Department, Little Rock, 1888; Bellevue Hospital Medical College, New York, 1889; member of the Arkansas Medical Society; emeritus professor of obstetrics, University of Arkansas School of Medicine; member of the staffs of the Baptist State Hospital and St. Vincent's Infirmary; aged 67; died, January 23, of coronary thrombosis.

Louis Joseph Cassano, New York; Fordham University School of Medicine, New York, 1921; member of the Medical Society of the State of New York; aged 37; on the staffs of the Columbus and Fordham hospitals, New York, and St. Joseph's Hospital, Yonkers, where he died, March 1, of acute mastoiditis, cavernous sinus thrombosis and meningitis.

David Michael Roberts ⊕ Major, M. C., U. S. Army, Fort Bragg, N. C.; Medical College of Ohio, Cincinnati, 1895; served in the Federal Service as a contract surgeon from 1898 to 1903; served during the World War; entered the medical corps of the U. S. Army as a major in 1920; aged 62; died, February 27, in Kona, Hawaii, of coronary disease.

Oscar Mitchell Unger, Pawtucket, R. I.; University of Michigan Medical School, Ann Arbor, 1915; member of the Rhode Island Medical Society; member of the New England Roentgen Ray Society; on the staff of the Notre Dame Hospital, Central Falls; aged 44; died suddenly, February 20, in the Memorial Hospital, of cerebral hemorrhage.

John G. W. Westerhoff ⊕ Carleton, Neb.; Medical Department of Omaha University, 1899; past president of the Thayer County Medical Society; served during the World War; formerly member of the state legislature and board of education; aged 64; died, February 23, in St. Elizabeth's Hospital, Lincoln, of heart disease and diabetes mellitus.

Leslie Alonzo Purifoy ⊕ El Dorado, Ark.; Rush Medical College, Chicago, 1930; past president and secretary of the Union County Medical Society; on the staffs of the Henry C. Rosamond Memorial Hospital and the Warner Brown Hospital; aged 30; died, February 1, of coronary embolus, as the result of injuries received in an automobile accident.

Melvin Samuel Rosenthal ⊕ Baltimore; College of Physicians and Surgeons, Baltimore, 1891; professor of dermatology, University of Maryland School of Medicine; fellow of the American College of Surgeons; aged 65; on the staffs of the Mercy Hospital and the Sinai Hospital, where he died, February 16, of carcinoma of the rectum.

Jane W. M. Skolfield, Salt Lake City; Denver and Gross College of Medicine, Denver, 1907; member of the Utah State Medical Association; vice president of the board of directors of the Utah State Industrial School, Ogden; on the staff of the Latter Day Saints Children's Hospital; aged 68; died, February 11, of chronic myocarditis.

Robert Alexander Walker ⊕ Menominee, Mich.; University of Bishop College Faculty of Medicine, Montreal, Que., Canada, 1895; past president of the Menominee County Medical Society; fellow of the American College of Surgeons; on the staff of St. Joseph's Hospital; aged 63; was found dead, March 1, of cerebral hemorrhage.

James Joseph Norton, Westfield, Mass.; New York University, University and Bellevue Hospital Medical College, 1908; member of the Massachusetts Medical Society and the New England Obstetrical and Gynecological Society; on the staff of the Noble Hospital; aged 50; died, January 19, in St. Francis Hospital, Hartford, Conn., of epithelioma with metastasis to the liver.

Joseph Wheeler Smith Jr. ⊕ Major, U. S. Army, retired, Eugene, Ore.; Long Island College Hospital, Brooklyn, 1913; served during the World War; was appointed a first lieutenant in the medical corps of the U. S. Army in 1918 and in 1920 was made a captain and in 1929 a major; was retired in 1934; aged 44; died, January 28.

Murray A. Russell, Washington, D. C.; Georgetown University School of Medicine, Washington, 1908; at one time associate clinical professor of surgery at his alma mater; fellow of the American College of Surgeons; formerly consulting surgeon to St. Elizabeth's Hospital (Psychiatric Department); aged 53; died, February 19.

Lewis Clinton Day ⊕ Elmira, N. Y.; University of Vermont College of Medicine, Burlington, 1904; formerly physician in the Indian Service; health officer of the town of Elmira; for many years on the staff of the State Reformatory; aged 57; died, March 1, in St. Joseph's Hospital, of carcinoma of the stomach.

Frederick McNaughton Robertson, Bristol, N. H.; Harvard University Medical School, Boston, 1901; member of the New Hampshire Medical Society; served during the World War; on the staffs of the Margaret Pillsbury Hospital, Concord and the Franklin (N. H.) Hospital; aged 58; died, January 26.

Ernest Lackner, Chicago; Bennett College of Eclectic Medicine and Surgery, Chicago, 1872; past president of the Southside branch of the Chicago Medical Society; for many years on the staffs of the Michael Reese and Grant hospitals; aged 83; died, March 14, of carcinoma of the gallbladder.

George Harvey Guth, Staten Island, N. Y.; University of Pennsylvania Department of Medicine, Philadelphia, 1903; served during the World War; acting assistant surgeon, U. S. Public Health Service; aged 64; died, February 16, in the U. S. Marine Hospital, of carcinoma of the intestine.

John Clarence Kepler ⊕ Kirkville, Iowa; Keokuk Medical College, College of Physicians and Surgeons, 1905; past president of the Wapello County Medical Society; aged 57; on the staff of St. Joseph Hospital, Ottumwa, where he died, February 17, of cerebral hemorrhage.

Charles Plummer Buzzell ⊕ Cleveland, N. D.; University of Vermont College of Medicine, Burlington, 1892; past president of the Stutsman County Medical Society; aged 67; died, February 15, in the Bismarck (N. D.) Hospital, of cholecystitis, hepatitis and hemiplegia.

Edward Simon Murphy ⊕ Dixon, Ill.; Rush Medical College, Chicago, 1897; fellow of the American College of Surgeons; past president of the Illinois Tuberculosis Association; on the staff of Dixon Public Hospital; aged 64; died, March 22, of cerebral hemorrhage.

Cyril Herman Burger, Winnipeg, Manit., Canada; L.R.C.P., L.R.C.S., Edinburgh and L.F.P.S. Glasgow, 1899; member of the Radiological Society of North America; aged 66; died, February 27, in the Winnipeg General Hospital, of carcinoma of the stomach.

John Davis Dabney Ware ⊕ Baltimore; University of Virginia Department of Medicine, Charlottesville, 1929; member of the Medical Society of Virginia; resident physician to the Johns Hopkins Hospital; aged 31; died suddenly, February 23, of heart disease.

Otho H. Williams Ragan, Hagerstown, Md.; University of Maryland School of Medicine, Baltimore, 1874; fellow of the American College of Surgeons; formerly on the staff of the Washington County Hospital; aged 81; died, January 15, of pneumonia.

James Lundie Barton, Memphis, Tenn.; Vanderbilt University School of Medicine, Nashville, 1895; member of the Tennessee State Medical Association; past president of the Memphis and Shelby County Medical Society; aged 67; died, January 6.

Harry Seltzer Meily, Carlisle, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1898; member of the Medical Society of the State of Pennsylvania; on the staff of the Carlisle Hospital; aged 81; died, February 24, of angina pectoris.

Donald Raymund Smith, Eldridge, Calif.; Cooper Medical College, San Francisco, 1899; formerly superintendent of the Mendocino State Hospital, Talmage; assistant superintendent of the Sonoma State Home; aged 60; died suddenly, of heart disease.

Claude Wellington Batdorf, Harrisburg, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1911; member of the Medical Society of the State of Pennsylvania; on the staff of the Harrisburg Polyclinic; aged 47; died, January 21.

Raphael Nassar Joseph, Middleboro, Mass.; Georgetown University School of Medicine, Washington, D. C., 1933; house physician to the Lakeville State Sanatorium; aged 26; died, March 2, of lobar pneumonia and pneumococcic meningitis.

Stacy Barcroft Dimond ⊕ Albany, Ill.; State University of Iowa College of Medicine, Iowa City, 1889; also a druggist; aged 71; died, March 8, in the Jane Lamb Hospital, Clinton, Iowa, of pulmonary embolus, following an appendectomy.

Benjamin Franklin Elfrink ⊕ Chenoa, Ill.; Rush Medical College, Chicago, 1902; past president of the Livingston County Medical Society; at one time mayor; formerly president of the school board; aged 60; died, March 12, of nephritis.

Milton D. Norris ⊕ Eldersburg, Md.; College of Physicians and Surgeons, Baltimore, 1892; past president of the Carroll County Medical Society; veteran of the Spanish-American War; aged 63; died, February 17, of heart disease.

Josephine Walter, New York; Woman's Medical College of the New York Infirmary for Women and Children, New York, 1882; member of the Medical Society of the State of New York; aged 84; died, February 26, of pneumonia.

Otis Bush Mallow, Hines, Ill.; Medical College of Ohio, Cincinnati, 1901; served during the World War; chief of the diagnostic center, Veterans Administration Facility; aged 59; died, March 10, of a self inflicted bullet wound.

Harry Clifford Antle, Chickasha, Okla.; University Medical College of Kansas City, 1904; member of the Oklahoma State Medical Association; served during the World War; aged 52; died, February 7, of hepatic cirrhosis.

George Clayton Zimmerman, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1933; member of the staffs of St. Luke's Hospital and the Children's Hospital; aged 33; died, February 21, of lymphosarcoma.

François de Borgia Bergeron, Fall River, Mass.; School of Medicine and Surgery of Montreal, Que., Canada, 1894; on the staff of St. Anne's Hospital; aged 64; died, February 27, of coronary thrombosis and arteriosclerosis.

Charles Dudley Underhill, Staunton, Va.; Harvard University Medical School, Boston, 1888; veteran of the Spanish-American War; aged 68; died, January 5, in the King's Daughters' Hospital, of bronchopneumonia.

Lucy Appleton, Central Falls, R. I.; Boston University School of Medicine, 1887; formerly on the staff of the Massachusetts Memorial Hospitals, Boston; aged 86; died, February 23, of chronic myocarditis and endocarditis.

Carl Kaiser Wagener ⊕ Pittsburgh; University of Pittsburgh School of Medicine, 1910; member of the American Academy of Pediatrics; served during the World War; aged 51; died, February 26, of heart disease.

John F. Reilly, Rensselaer, N. Y.; Albany (N. Y.) Medical College, 1883; formerly health officer of Rensselaer; consulting obstetrician to St. Peter's Hospital, Albany; aged 71; died, March 3, of coronary thrombosis.

Benjamin Franklin Roe, ⊕ Chetopa, Kan.; University Medical College of Kansas City, 1908; member of the Kansas Medical Society; president of the board of education; aged 63; died, February 17, of angina pectoris.

Frank Eugene Andrews, Adrian, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1878; member of the Michigan State Medical Society; formerly mayor; aged 77; died, January 20.

Adolph W. Lakemeyer, Chicago; Rush Medical College, Chicago, 1902; aged 62; for many years on the staff of the Norwegian-American Hospital, where he died, March 12, of a self inflicted bullet wound.

William Melvin Ramsay, Jonesboro, Tenn.; Vanderbilt University School of Medicine, Nashville, 1887; aged 75; died, February 14, in a hospital at Greeneville, of senile gangrene and hypostatic pneumonia.

Charles August Riemcke, Yakima, Wash.; State University of Iowa College of Medicine, Iowa City, 1909; member of the Washington State Medical Association; aged 52; died, January 21.

Philip Ross Watkins, Mena, Ark.; Vanderbilt University School of Medicine, Nashville, Tenn., 1893; member of the Arkansas Medical Society; aged 69; died, February 24, of pneumonia.

Charles Adrian Julian ✠ Greensboro, N. C.; Louisville (Ky.) Medical College, 1888; aged 68; on the staff of the Wesley Long Hospital, where he died, February 15, of pneumonia.

Edwin Lamar Nichols, Raleigh, N. C.; Medical College of the State of South Carolina, Charleston, 1934; aged 25; intern at the Rex Hospital, where he died, March 4, of septicemia.

Thomas Ellis Tucker, Monroeville, Ala.; University of Alabama School of Medicine, 1920; formerly health officer of Houston County; aged 43; died, Dec. 19, 1934, in a hospital at Selma.

John Parker Dickson, Keokuk, Iowa; State University of Iowa College of Medicine, Iowa City, 1888; also a pharmacist; aged 73; died, February 1, of hypertrophy of the prostate and uremia.

Powhatan Stanley Schenck, Norfolk, Va.; College of Physicians and Surgeons, Baltimore, 1881; formerly director of public welfare and health commissioner; aged 71; died, January 24.

George Arnold Woodcock, Cottonwood, Idaho; College of Physician and Surgeons of Chicago, 1894; member of the Idaho State Medical Association; aged 64; died, Dec. 20, 1934.

H. S. Copeland, Dresden, Tenn.; University of Tennessee Medical Department, Nashville, 1893; formerly bank president; aged 66; died, January 28, in St. Thomas Hospital, Nashville.

Amos Charles Fey ✠ Galesburg, Ill.; Northwestern University Medical School, Chicago, 1925; aged 34; on the staff of St. Mary's Hospital, where he died, March 3, of pneumonia.

Charles S. Means, Wysox, Pa.; Jefferson Medical College of Philadelphia, 1883; formerly on the staff of St. Agnes' Hospital, Philadelphia; aged 72; died, February 19, of uremia.

Edward Kenneth Wolff, Media, Pa.; Temple University School of Medicine, Philadelphia, 1910; on the staff of the Media Hospital; aged 50; died, March 1, of heart disease.

James Archibald McNiven, Aberdeen, Wash.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1891; aged 80; died, February 4, of cerebral hemorrhage.

Charles L. Allen, Cosby, Mo.; Central Medical College of St. Joseph, 1898; member of the Missouri State Medical Association; aged 61; died, Dec. 8, 1934, of arteriosclerosis.

Charles D. Napier, Blenheim, S. C.; Medical College of South Carolina, Charleston, 1898; member of the South Carolina Medical Association; aged 58; died, January 7.

Alexander Vernon Webster, Vancouver, B. C., Canada; McGill University Faculty of Medicine, Montreal, Que., 1912; aged 50; died, February 14, of coronary sclerosis.

William Crawford Mackintosh, San Francisco; Cooper Medical College, San Francisco, 1910; fellow of the American College of Surgeons; aged 50; died, January 10.

Jay Frederick Pitts, Chicago; National Medical University, Chicago, 1904; aged 56; died, February 12, in the Westlake Hospital, Melrose Park, Ill., of heart disease.

Lee W. Wheeler, Kite, Ga.; University of Georgia Medical Department, Augusta, 1900; aged 64; died, January 14, in a hospital at Dublin, of valvular heart disease.

Lee J. Knerr, Philadelphia; Hahnemann Medical College of Philadelphia, 1880; aged 77; died, February 17, of gastric hemorrhage and carcinoma of the prostate.

Malcolm Storer ✠ Boston; Harvard University Medical School, Boston, 1889; formerly instructor in gynecology at his alma mater; aged 72; died, January 2.

Wilbert Shallenberger, Chicago; Barnes Medical College, St. Louis, 1901; Illinois Medical College, Chicago, 1902; aged 60; died, March 17, of carcinomatosis.

William Cornelius Pressly, Troy, Tenn.; University of the City of New York Medical Department, 1889; aged 77; died, February 18, of arteriosclerosis.

Karl Elmer Ochs ✠ Cleveland; Western Reserve University Medical Department, Cleveland, 1904; aged 54; died suddenly, February 5, of heart disease.

Christopher C. Banta, Coal, Mo.; University of Nashville (Tenn.) Medical Department, 1888; aged 68; died, Dec. 2, 1934, of carcinoma of the sigmoid.

Daniel Webster Dorman, Boston; College of Physicians and Surgeons, Boston, 1893; aged 70; died, January 27, of myocarditis and arteriosclerosis.

Benjamin Anthony Robinson, Sayreville, N. J.; University of the City of New York Medical Department, 1892; aged 72; died, Dec. 8, 1934.

Leonard Melvin Pulsifer, Davis, Calif.; University of the City of New York Medical Department, 1888; aged 66; died, January 5, of heart disease.

Henry John Brewer, Brooklyn; Long Island College Hospital, Brooklyn, 1880; Civil War veteran; formerly coroner; aged 88; died, January 9.

William Hendricks, Chicago; Keokuk (Iowa) Medical College, 1891; aged 86; died, March 14, of chronic myocarditis and acute nephritis.

James A. Humphrey, Martha, Okla.; Missouri Medical College, St. Louis, 1890; aged 70; died, February 17, of hypertension and myocarditis.

Erwin R. Wright, Philadelphia; Detroit Medical College, 1885; aged 76; died, February 2, in the Presbyterian Hospital, of bronchopneumonia.

William Whipper Purnell, Berkeley, Calif.; Howard University College of Medicine, Washington, D. C., 1893; aged 65; died, January 2.

Thomas Hayne Wedaman, Johnston, S. C.; University of Maryland School of Medicine, Baltimore, 1909; aged 52; died, suddenly, January 9.

Walter Keene Prichard ✠ Cloverdale, Ind.; Miami Medical College, Cleveland, 1882; aged 75; died, February 8, of phlegmonous erysipelas.

Emil Bernhardt Quade, Wausau, Wis.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1901; aged 57; died, January 31.

Joseph Edward Duxbury, Central Falls, R. I.; University of the City of New York Medical Department, 1891; aged 67; died in January.

Edward Franklin Stevens, Seattle; Medical School of Maine, Portland, 1887; aged 87; died, February 12, of chronic myocarditis.

Robert Murphy Freeman, Dallas, Texas; Baylor University College of Medicine, Dallas, 1907; aged 72; died, January 20.

Lydia Estelle Kynett Parmele, Glendale, Calif.; American Medical Missionary College, Chicago, 1900; aged 69; died, January 7.

Andronique Lafond, Parisville, Que., Canada; Laval University Faculty of Medicine, Quebec, 1908; aged 60; died, January 8.

James L. Alexander, Hartsville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1881; aged 83; died, January 7.

Adam J. Dundore, Philadelphia; Jefferson Medical College of Philadelphia, 1866; aged 92; died, February 21, of arteriosclerosis.

Warren Linwood Earnest, Winfield, Ala.; Memphis (Tenn.) Hospital Medical College, 1904; aged 64; died, January 25.

John Kelley Wood, Brownsville, Ky.; University of Louisville (Ky.) Medical Department, 1905; aged 54; died, February 4.

Gustav J. Racek, Pasadena, Calif.; Chicago Medical College, 1884; aged 74; died, January 7, of arteriosclerotic heart disease.

Hershell M. Earle, Berry, Ky.; Kentucky School of Medicine, Louisville, 1898; aged 72; died, February 16, of angina pectoris.

John R. Perry, Atlanta, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1892; aged 80; died, January 24.

Samuel T. Reeves, Fort Madison, Iowa; Milwaukee Medical College, 1908; aged 58; died, in February, of heart disease.

F. W. Macartney, Gaspe, Que., Canada; McGill University Faculty of Medicine, Montreal, 1896; died, February 13.

Anthony Oaks, Preston, Ont., Canada; University of Toronto Faculty of Medicine, 1888; aged 72; died, January 18.

Chester Edward Logan, Largo, Fla.; Memphis (Tenn.) Hospital Medical College, 1882; aged 75; died, January 11.

Harry McElwee, Long Beach, Calif.; Medical College of Ohio, Cincinnati, 1882; aged 73; died, January 17.

William G. Eaves, Bremond, Texas (licensed in Texas under the Act of 1907); died, Dec. 25, 1934.

Tracy R. Clark, Clovis, Calif.; Missouri Medical College, St. Louis, 1880; aged 80; died, January 28.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

BEER AND GLYCOSURIA

To the Editor:—A few months ago I examined about thirty applicants for a job on some construction work. Several specimens of urine examined showed a reducing substance with Fehling's solution and two gave a typical reaction for sugar. Asked if they had been drinking beer, they answered in the affirmative. The weather was very hot and one man stated that he drank nine glasses of beer during the day or that afternoon before he was examined. What percentage of sugar is contained in beer and what type? Is an excess of beer liable to cause a reaction as above?

J. C. DRAKE, M.D., Kerman, Calif.

ANSWER.—Carbohydrate as such is present in beer chiefly as maltose and dextrins. The dextrose equivalent of beer, including the sugar derived from protein, glycerin, lactic acid, and so on, is about 12 Gm. to the 8 ounce glass. In addition to this, however, each glass of beer contains about 60 calories in the form of alcohol. Thus the 9 glasses of beer that one man drank would represent 108 Gm. of carbohydrate, or 432 calories plus 540 calories from alcohol, a total of almost 1,000 extra calories for the day. Although alcohol does not go to form sugar, it spares sugar taken in the diet, so that the available carbohydrate in that person might then be high enough to cause glycosuria.

TACHYCARDIA WITH INFECTION

To the Editor:—A white girl, aged 15, height 63 inches (160 cm.), weight 127 pounds (57.6 Kg.), seen in September, complained of general lassitude, easy fatigue, attacks of rapid heart beat associated with pain over the right parietal region, and intermittent fever. The family and general past history is negative until the winter of 1932, when the patient first complained of weakness, fatigue, and recurrent attacks of pain in the right lower quadrant. These symptoms recurred until in March 1933 a chronically inflamed appendix containing fecaliths was removed. On the third postoperative day a pulse of 140 was recorded without apparent cause. This subsided and convalescence was normal. The attacks of pain in the right lower quadrant have not reappeared, but the paroxysmal attacks of tachycardia continue to reappear at intervals of four to six weeks. There is no apparent predisposing factor. Fever usually accompanies these attacks, varying from 99 to 100.4 F. The patient feels weak and exhausted. The tachycardia usually subsides spontaneously, the pulse rate rarely going below 90 per minute, however. The elevation of temperature usually persists for several days. Dull pain in the right parietal region frequently, but not always, accompanies the tachycardia. The appetite is fair, digestion seems normal and the bowels act well, as do the kidneys. The mentality is a little above the average. Menstruation is regular and of normal amounts, and the menstrual cycle bears no relation to the attacks of tachycardia. The patient is well developed and well nourished. The throat is clean. There is slight cloudiness of the right maxillary sinus, but there are no subjective signs. The chest and lungs are normal. The heart sounds are normal, the area of cardiac dulness is not increased, and no murmurs are present. Abdominal examination is negative except for a well healed right rectus scar. The spleen is not palpable. The reflexes are normal. There is no edema of the extremities. The following laboratory work has been done: basal metabolic rate normal (plus 10); white blood count 8,900 (temperature normal) and 11,000 (temperature 99.5); polymorphonuclears 68 per cent, small lymphocytes 22 per cent, large lymphocytes 6 per cent, mononuclear cells 10 per cent; red blood cells 5,100,000 per cubic millimeter; hemoglobin 90 per cent; agglutination for Brucella abortus, typhoid and paratyphosus A and B all negative; tuberculin tests with 0.0002 mg. and 0.005 mg. both negative; catheterized specimen of urine negative both chemically and microscopically; fluoroscopy of heart and lungs negative. In view of these results, would you kindly suggest further lines of attack in this case and possible diagnoses that may assist in helping this patient? Please omit name.

M.D., Ohio.

ANSWER.—The presence of fever and leukocytosis in the attacks described strongly suggests an infectious etiology. The initiation of the attacks following an appendectomy suggests the abdominal cavity as a source of the infection. An infection about the appendix may be carried upward behind the ascending colon and produce metastatic foci about the liver, gallbladder or subphrenic area. It may proceed behind the peritoneum to the region of the right kidney. The lymph channels along the mesenteric root may carry the infection upward to the right side of the abdomen, and the course may proceed upward behind the descending colon to the spleen and left portion of the liver. The bases of the lungs should be investigated for evidence of infection extending upward through the diaphragm.

Metastatic infection is not infrequently found in the pelvis.

This explanation would presuppose a low grade nonsuppurative adenitis, from which, at intervals, a sufficient dose of toxin is discharged to produce the attacks described. The continued presence of the infection would account well for the general lassitude and easy fatigue and continuously rapid pulse.

Such a low grade infection need not necessarily be located in the abdomen or pelvis. It would seem most probable in this case because of the condition of the appendix; but such an infection may occur about the hilar lymph glands or even in the sinuses of the skull.

The parietal headache suggests the latter possibility, although the headache might easily be explained as a toxic manifestation.

Paroxysmal tachycardia may be fairly well ruled out because of the occurrence of fever and leukocytosis. In addition, the rate is rather low for such an abnormal rhythm.

The treatment has not been detailed, but it would seem logical, if the case is considered an infection, to insist on a prolonged period of rest in bed. The program should be pursued until the attacks fail to appear at the usual time interval. This would mean at least six weeks and might have to be prolonged over a period of months.

PHYSICAL EFFICIENCY TESTS

To the Editor:—I am interested in tests of physical efficiency but have not been able to find an examination that results in an adequate expression of an adult's actual physical state. The tests ordinarily used by educators—Roger's, Pignet's, Taylor's, Dreyer's, Martin's and Sargent's—all seem to be based on questionable empiricism or are actually fanciful. The cardiovascular performance and nonperformance tests are inconsistent when used in a large group of men or women. I should appreciate references, and a statement of the accepted medical evaluation of such tests. Please omit name.

M.D., Maine.

ANSWER.—A dependable index of health and physical efficiency would be valuable, and numerous efforts have been made to develop tests for this purpose. Most of the tests proposed, some of which have been widely used and called physical efficiency tests, are based on the effects of changes in posture or a specified amount of exercise on the pulse rate, blood pressure and respiration. Actually what these tests measure is only the reaction of the cardiovascular system to a given amount of effort at a particular time. Physical efficiency is dependent on much more than this. Although differences between the results of these tests can be demonstrated in selected groups of subjects, the variability of results produced in individual cases by unimportant and transitory factors, such as nervousness, excitement and fatigue, is so great as to make the tests of little value in individual diagnosis or in the estimation of individual physical efficiency. Critical analyses of certain of these tests are contained in the following:

Brittingham, W. H., and White, P. D.: Cardiac Function Tests, THE JOURNAL, Dec. 2, 1922, p. 1901.

Seham, Max, and Egerer-Seham, Grete: Physiology and Exercise: An Investigation of Cardiovascular Tests in Normal Children with Tuberculosis and Valvular Heart Disease, *Am. J. Dis. Child.* **26:** 554 [Dec.] 1923.

Cripps, L. D.: The Application of the Air Force Physical Efficiency Tests to Men and Women, Special Report Series No. 84, Medical Research Council, London, 1924.

Hambly, W. D.; Pembry, M. S., and Warner, E. C.: The Physical Fitness of Men Assessed by Various Methods, Guy's Hosp. Rep. **75:** 388 [Oct.] 1925.

STRICTURES OF CERVIX

To the Editor:—I am encountering an unusually large number of complete cervical atresias. In most of these cases cauterization has been done elsewhere, but some are of congenital origin. The treatment that I have been carrying out has been to dilate the cervix thoroughly and then place a Chamber's pessary in the canal and leave it there for about six weeks. My results are far from satisfactory. Will you please outline treatment used in the larger clinics. Please omit name and address.

M.D., Georgia.

ANSWER.—Strictures of the cervical canal, especially partial strictures, are more common than is generally realized. In young women the most frequent causes are infection and instrumentation. The most common infection responsible for stricture is gonorrhea. The most frequent instrumental manipulations that lead to atresia of the cervix are incorrect applications of the electrical cautery and curets and cervical dilators used for dilation and curettement of the uterus. Operations on the cervix also result in strictures in many cases, and occasionally tumors and fibroids block the cervical canal. In older women cervical strictures are usually due to changes that result from old age, the use of radium and carcinoma. Of course, radium and cancer may also produce strictures in younger women.

The most common symptoms of strictures of the cervix are leukorrhea, the passage of tarry blood during menstruation and dysmenorrhea. Not infrequently, pyometra results from a cervical block. As Curtis (THE JOURNAL, March 12, 1932, p. 861)

emphasizes, "the otherwise inexplicable sudden appearance of profuse purulent vaginal discharge in a woman beyond the menopause is pathognomonic evidence of cervical stricture."

Prophylactically, strictures may be avoided by the careful use of the electrical cautery, cervical dilators and uterine curets. Women who have had intra-uterine and intracervical radium should be checked up at frequent intervals and their cervices should be gently probed to try to prevent, but more particularly to detect, strictures. A probe should be used especially if there is a profuse discharge after the insertion of radium into the uterus or cervix.

As noted in the query, dilation of the cervix even when followed by the use of a pessary in the cervical canal does not satisfactorily overcome all cervical strictures, unless the obstruction is at the external os. If too forcible attempts are made to break down strictures, new ones may be formed which are worse than the original ones. If complete strictures in young women cannot be satisfactorily overcome by means of Hegar dilators, they may be relieved by a Schroeder or Sturmdorf operation. However, great care must be used to see that a sufficiently patulous cervical canal is left, otherwise new strictures may form. If the strictures produce symptoms in older women, the entire cervix may be amputated or a vaginal or abdominal hysterectomy performed.

PERSPIRATION OF FEET

To the Editor:—I should like to know a good treatment for the prevention of excess perspiration of the feet in children. Some children have very excessive perspiration of their feet, with a disagreeable odor, so that their socks have to be changed sometimes two or three times a day. I am speaking of cases in which there is no associated ringworm and the child is perfectly normal in all other respects. I have treated these by soaking every night in a weak solution of formaldehyde but would be glad to hear of a more effective and less disagreeable treatment.

G. L. JOHNSON, M.D., Englewood, N. J.

ANSWER.—The following are effective procedures in the prevention of excessive perspiration and disagreeable odors of the feet in children:

Observe absolute cleanliness.

Bathe the feet once daily for about ten minutes in any of the following solutions: (*a*) 1:4,000 potassium permanganate; (*b*) compound solution of cresol, three teaspoonfuls to one gallon of warm water; (*c*) alum, one teaspoonful to one pint of water.

Use one of the following antiseptic dusting foot powders freely twice daily: (*a*) from 1 to 2 per cent salicylic acid in powdered boric acid or (*b*) from 1 to 2 per cent salicylic acid in equal parts of zinc oxide and talcum. These powders may also be used without the salicylic acid.

Have the shoes large and loose, to increase ventilation. Alternate the shoes daily, airing the used ones.

Change the socks daily.

If these measures fail to control excessive sweating, a strong astringent may be used in addition, such as a 25 per cent aluminum chloride solution, dabbed on the affected parts every third day and allowed to dry.

Roentgen therapy is the best and most satisfactory remedy in obstinate cases.

EFFECTS OF METHANE

To the Editor:—Eight Negroes have just recently come under my care; they claim that they have a bronchitis as a result of being exposed to marsh gas or methane while working in a cofferdam in June 1933. Physical and roentgen examinations show no acute lesions, yet they complain of shortness of breath and some have a slight cough. Complete laboratory work has not been completed to rule out other conditions. Kindly let me know what effect, if any, marsh gas or methane has on the eyes and respiratory tract. It has been my understanding that marsh gas in a sufficient amount of air would not produce any irritation or damage to the respiratory tract. Will you kindly give me any information in regard to the effects that marsh gas might have on the lungs? Kindly omit name.

M.D., Mississippi.

ANSWER.—It is not within reason to believe that exposure in June 1933 to ordinary gas irritants would have produced a bronchitis and other respiratory tract involvement persisting until October or November 1934. Pure methane is without known direct irritant action on the respiratory tract or eyes. It becomes necessary to believe that, if any such action was induced, other gases must have coexisted with the methane. It is not unusual for hydrogen sulphide, carbon bisulphide or other sulphur compounds, or other irritants that are not sulphur compounds, to be present along with methane. If such substances actually were present, irritation of the eyes, respiratory tract, and so on is an expectancy; but continuation for more than a year without earlier complaint is open to suspicion. Investigation should be directed to more recent exposures. It is presumable that cofferdam work is wet and consequently that no gross amounts of dust were produced. If, to the contrary, gross exposure to siliceous dusts was provided, the possibility of dusty lung disease exists. However, any such disorder may be ruled out by appropriate roentgen examination, which appears already to have been made.

TREATMENT OF SYPHILIS

To the Editor:—I have a patient, a man, aged 25, who in September 1933 had a suggestive penile lesion. Within three weeks the blood Wassermann reaction was four plus. Treatment was immediately started, a course of eight intravenous injections of neoarsphenamine (0.6 Gm.) being alternated with eight injections of iodobismitol (2 cc.) intramuscularly. Both were given at weekly intervals and no rest periods were allowed between courses. He has now had four courses of neoarsphenamine and three of the bismuth compound and is on his fourth of the bismuth compound. His spinal fluid was found to be negative serologically in February 1934. A blood Wassermann test in June showed Kahn negative, no fixation of complement in noncholesterolized antigen, and an unsatisfactory test with cholesterolized antigen. A blood test on October 6 showed: Kahn, negative; noncholesterolized antigen, negative; fixation of complement in cholesterolized antigen, two plus. The original blood test, confirmed, was four plus in all three tests. The patient shows no sign of any physical impairment on complete examination, including a thorough neurologic examination. I have intended to complete the fourth bismuth course and give him one more course of neoarsphenamine and then take his blood test in three months. Would you say that this treatment is adequate or should I persist until the cholesterolized antigen shows no fixation? What is the significance of the one positive test with this antigen and the two negative; i. e., Kahn and noncholesterolized? I have another patient, a young married woman, whose husband contracted syphilis in 1930 and married her in June 1932. In October 1933, on a routine examination, a four plus Wassermann reaction was found, although the only sign was an unexplained dizziness. Her spinal fluid was found to be negative in December 1933. She has received the same treatment as the foregoing male patient except that the neoarsphenamine dose had to be lowered because of severe reactions. Her blood test on October 20 was three plus in all three tests. She still shows no clinical evidence of syphilis and there is no more dizziness. Once again, is the treatment adequate, and how much longer do you estimate treatment will be necessary? How much treatment is necessary before a persistently positive Wassermann reaction may be taken as only evidence of the patient being Wassermann fast? If published, please omit name and town.

M.D., New York.

ANSWER.—The diagnosis of suggestive genital lesions should be made with the dark field, preferably before the blood Wassermann reaction has become positive, as it has been repeatedly shown that treatment begun in the seronegative stage offers the patient the best chance for an early cure. The treatment as outlined has been adequate and according to modern standards, which advises continuous rather than intermittent treatment in early syphilis. In all probability the next Wassermann report will show a complete reversal in the cholesterolized antigen. The vagaries of the serologic reports in syphilis are difficult to account for. The cholesterolized antigen, being the more sensitive of the two, is apt to remain positive longer. The interpretation of the Wassermann and Kahn tests should be correlated with the physical observations, and experience has shown the fallacy of placing too great reliance on a single negative test.

In the second case, treatment has been adequate but again it is difficult to estimate how much longer treatment will be necessary. There are no exact standards or criteria available that can be used as evidence of the patient being considered Wassermann fast. The inquirer should be congratulated on his ability to administer the large amount of treatment given these patients without straining their physical or financial endurance too much.

ENDOCRINE GLANDS AND DIABETES

To the Editor:—I wish to inquire as to the relationship of the other endocrine glands to diabetes mellitus. In advanced cases in which the blood sugar is controlled with difficulty with insulin, are there any benefits to be gained by the administration of other gland products, e. g., parathormone? I would appreciate a summary of the literature. Please omit name and address.

M.D., Ohio.

ANSWER.—This is a question at present rather difficult to answer. It has been found that the anterior pituitary secretes a diabetogenic principle which is antagonistic to insulin (the pituitary raises the blood sugar, while insulin lowers it). Based on the observation that estrogenic principles (theelin, Amniotin and so on) suppress the secretion of gonadotropic substances by the pituitary, estrogenic substance has been administered to pancreatectomized animals to see whether secretion of the diabetogenic principle might also be reduced (and the blood sugar thereby decreased). This has been found to be the case (Barnes, Regan and Nelson: THE JOURNAL, Sept. 16, 1933,

p. 926). However, such use of estrogenic substance in clinical cases would be restricted by its effects on the secondary reproductive organs in both female and male. If estrogenic substance should be otherwise indicated in a patient with refractory diabetes, it might be tried. In some cases in which overactivity of the pituitary is suspected, radiation therapy of this organ has been tried, but this treatment entails a large element of danger in that selective suppression of only one of the many factors produced by the pituitary would be impossible. Amenorrhea and disturbances of fat metabolism have followed such therapy. In addition, of course, structures of the central nervous system would be affected to an indeterminable extent.

Recent investigators (Barnes, Scott, Ferrill and Rogoff: *Proc. Soc. Exper. Biol. & Med.* **31**:524 [Feb.] 1934) have also implicated the suprarenal medulla in the control of blood sugar (epinephrine, as is well known, raises the blood sugar). Although a reciprocal interrelationship of the suprarenal and the parathyroid glands has been demonstrated (Rogoff: *Science*, Oct. 5, 1934, p. 319), the relationship of the latter phenomenon to the blood sugar level is unknown. Administration of parathyroid extract clinically in diabetes, such as the inquirer suggests, certainly has no sound basis in experimental physiology. Possible clinical applications of these observations are not known.

An extensive series of articles on glandular physiology and therapy, in which all these questions will be authoritatively discussed, is now being published in THE JOURNAL under the auspices of the Council on Pharmacy and Chemistry.

ENCEPHALITIS AFTER ARSPHENAMINE

To the Editor:—I wonder whether you can help me in arriving at a possible diagnosis for the following complication of arsenotherapy: A white woman, aged 26, a secundipara, whose past medical history and family history are of no importance and who smokes a pack of cigarets a day and drinks beer occasionally, came to the outpatient department with an extensive roseola of secondary syphilis of one week's duration, with mucous patches in the throat, on the umbilicus and on the labia. The primary sore was on the labia. She had a generalized adenopathy and a four plus Wassermann reaction. Neurologic examination at this time showed nothing abnormal. Treatment was started immediately, 0.1 Gm. of neoarsphenamine being given intravenously. It so happened that the needle slipped out of the vein and only part of the solution was administered the first day, making the initial dose 0.1 Gm. One week later she was given 0.15 Gm. of neoarsphenamine. Two days after this her physician sent her into the hospital because of a severe Herxheimer reaction manifesting itself by extreme swelling of the labia. She was admitted September 29 and we were contemplating discharging her October 1 because the reaction had subsided in the usual manner. However, 0.3 Gm. of neoarsphenamine was administered and the following morning an extensive scarlatinoid rash developed which my associates and I called "an eighth day arsenical reaction." We kept her in the hospital in order to observe the skin reaction and it began to clear up two days after its appearance. On the fourth day after the 0.3 Gm. of neoarsphenamine the patient became drowsy, was very noisy when aroused, vomited, refused to eat and became quite irrational. Although there were no convulsions at any time, her body and limbs often trembled considerably. There was no loss of sphincter control. Associated with this there was a fever varying from 99 to 103 and a pulse rate varying from 100 to 120. The stupor and delirium became worse from day to day over a period of four days. There was no real coma at any time. Neurologic examination showed the pupils slightly contracted, reacting normally to light and in accommodation, and lateral nystagmus. There was no cranial nerve involvement. The deep tendon reflexes were markedly increased and ankle clonus was present. Babinski's sign was negative. The optic disk showed no signs of pressure. Spinal fluid examination showed a cell count of 20 leukocytes per cubic centimeter; the spinal fluid Wassermann reaction was positive in all concentrations; the colloidal gold test gave a second zone reaction; the globulin test was positive. At the first sign of her stupor she was treated with 1 cc. of 1:1,000 epinephrine hydrochloride intramuscularly every four hours and 1 Gm. of sodium thiosulphate intravenously every twenty-four hours. She began to improve on the fifth day following the onset of her stupor and she made an uneventful recovery and was discharged October 15, seventeen days after admission and eleven days after the onset of the stupor. The only diagnosis of her reaction that offered itself to us was that of a hemorrhagic encephalitis. Could such a diagnosis be justified on such observations? What conditions would offer themselves for a differential diagnosis? With a history of such a reaction, is one justified in employing arsenotherapy on this patient at some future time or should one avoid arsenicals and use only the heavy metals? Kindly omit name.

M.D., Pennsylvania.

ANSWER.—Encephalitis following the administration of arsphenamine has been described and seems to be established. It is difficult to suggest any other explanation for the symptoms and their sequence in this case. Under these circumstances the use of arsenicals seems to be contraindicated. In view of the strongly positive signs of invasion of the central nervous system, the possibility should be considered of inducing fever, by inoculation with malaria or otherwise, as a prophylactic measure. Thorough treatment with the heavy metals should unquestionably be continued.

MIGRAINE WITH HYPERTHYROIDISM

To the Editor:—I should be glad to have assistance and a diagnosis of this case: M. J. W., a white man, aged 36, complains of feeling all in and tires on the slightest exertion. There has been a long-standing history of severe headaches, relieved only by hypodermic injections of morphine, one-fourth grain (0.016 Gm.). They occur from six to twenty times a year. The patient is 5 feet 7½ inches (170 cm.) tall and weighs 142 pounds (64 Kg.). He has lost about 10 pounds (4.5 Kg.) over a course of five years. He sleeps well, does not cough, has no increase in temperature, and has no pains except during the attacks of migraine. The rate of the heart is 90 times normally; on slight exertion, such as jumping up and down lightly fifteen times on one foot, the pulse rate increases to 130. It is a little slow in returning to its normal range of 90. The blood pressure is 110 systolic, 80 diastolic. The tongue is heavily coated constantly. The bowel function is normal (no laxatives are needed). The basal metabolic rate is plus 17. The Wassermann reaction is negative; hemoglobin is 85; there is no leukocytosis. The patient is used to taking four cups of coffee daily in addition to three or four coca-colas. He smokes on the average a package of cigarets a day and uses alcohol slightly. There are no foci of infection. The tonsils were removed in 1928. Roentgen examination of the teeth disclose no abscesses. Eye examination reveals that glasses are not necessary. The patient reports that for years he has felt it necessary to drive himself with stimulants to do his work, which is largely mental, with an ordinary amount of physical activity. Any suggestions you may offer in helping me to come to a diagnosis will be appreciated. Please omit name.

M.D., Kentucky.

ANSWER.—The impression obtained from this case report is that in addition to the migraine the patient has a mild hyperthyroidism of the type often associated with adenomatous goiter continued over a long period. The points in favor of this impression are the loss in weight, the easy fatigability, the tachycardia, the slightly elevated basal metabolic rate and the ability to sleep well. The increased cardiac lability, or even myocardial impairment as indicated by the decreased exercise tolerance, might well be the cardiac manifestations of a long continued thyrotoxicosis of mild grade, although the pulse pressure is not increased.

Other features of thyrotoxicosis which if present would confirm the diagnosis are increased tolerance to cold, decreased tolerance to heat, moist warm hands, fine tremor and a tendency to perspiration.

The absence of fever and the maintenance of a normal hemoglobin level are compatible and would discredit the possibility of a chronic infection such as tuberculosis as a likely cause for the illness.

In view of the migraine, the possibility of an anxiety neurosis with chronic mental fatigue and sympathetic instability should be considered. Such a condition might conceivably produce the symptoms and signs described but should not be difficult to differentiate from hyperthyroidism. If this cannot be done satisfactorily, the effect should be observed of a program of increased rest and correction of the faulty habits mentioned.

ENCEPHALITIS, TUMOR OR HYPOGLYCEMIA

To the Editor:—A woman, aged 26, married, with no children, began to be troubled six months ago with a progressive lethargy, during which time there occurred attacks of vomiting. The outstanding symptom is yawning and inability to remain awake, although between attacks the patient is extremely well and symptom free. Her past history is negative with the exception of a hypothyroid condition (basal rate minus 26, six months ago), which was corrected by the administration of one-half grain (0.03 Gm.) of thyroid and 5 grains (0.3 Gm.) of ovarian extract, three times a day. After six months' time her basal rate was plus 6. She does not complain of headache or abdominal distress, nor is there tenderness elicited at any point in the abdomen. Her fasting blood sugar was 56. Owing to the extreme lowness, this was questioned, but a blood sugar tolerance test proved that there was a hypoglycemia, which is probably due to a hyperinsulinism. The carbon dioxide combining power was low. The blood chlorides were 400 and blood urea 14. On the administration of 300 cc. of a 20 per cent dextrose solution, the lethargy was completely controlled, as was the vomiting. This appears to be a case which can be held symptom free on the administration of dextrose intravenously, although sugars by mouth apparently have no effect. Could you advise as to the possibilities of a diagnosis, as urinalysis, blood count and roentgen examination of the skull are also negative? As the patient is in the hospital at the present time, I would appreciate an early response. Please omit name and address.

M.D., Delaware.

ANSWER.—Despite the low blood sugar in this case, the general picture does not suggest hyperinsulinism. Patients with a spontaneous hypoglycemia are almost always relieved by taking dextrose by mouth, vomiting is not a characteristic symptom, and blood chlorides are not reduced. It is possible that the effect obtained by the intravenous injection of dextrose may have been due to its action as a hypertonic solution. The complaints are somewhat suggestive of encephalitis or tumor, even though a positive diagnosis may not be possible at this time. Stramonium leaf or ephedrine may be tried for the purpose of obtaining symptomatic relief.

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written (Group B candidates).* The examination will be held in various cities throughout the country, April 29. *Oral (Group A and Group B candidates).* New York, June 10. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Final oral and clinical examination (Group A and Group B candidates).* Atlantic City, N. J., June 10-11. *Application lists close May 1.* Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: Philadelphia, June 8, and New York, June 10. *Applications must be filed before April 10.* Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: New York, June 8. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PEDIATRICS: Atlantic City, N. J., June 10, and St. Louis, Nov. 19. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: Philadelphia, June 7-8. Sec., Dr. Walter Freeman, 1726 Eye St. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: San Francisco, May 10-12, and Atlantic City, N. J., June 8-10. Sec., Dr. Byrl R. Kirklin, Mayo Clinic, Rochester, Minn.

ARKANSAS: *Basic Science.* Little Rock, May 6. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Regular.* Little Rock, May 14. Sec., Dr. A. S. Buchanan, Prescott. *Eclectic.* Little Rock, May 14. Sec., Dr. L. L. Marshall, 820 W. 14th St., Little Rock.

CALIFORNIA: *Reciprocity.* San Francisco, May 15. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

ILLINOIS: Chicago, April 9-11. Superintendent of Registration, Department of Registration and Education, Mr. Eugene R. Schwartz, Springfield.

MINNESOTA: Minneapolis, April 16-18. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul.

NATIONAL BOARD OF MEDICAL EXAMINERS: The examination will be held in all centers where there are Class A medical schools and five or more candidates desiring to take the examination, June 24-26. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

NEBRASKA: *Basic Science.* Omaha, May 7-8. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: Carson City, May 6. Sec., Dr. Edward E. Hamer, Carson City.

NEW MEXICO: Santa Fe, April 8-9. Sec., Dr. P. G. Cornish Jr., 221 W. Central Ave., Albuquerque.

OREGON: *Basic Science.* Portland, May 18. Sec., Mr. Charles D. Byrne, University of Oregon, Eugene.

Connecticut November Examination

Dr. Thomas P. Murdock, secretary, Connecticut Medical Examining Board, reports the written examination held in Hartford, Nov. 13-14, 1934. The examination covered 7 subjects and included 70 questions. An average of 75 per cent was required to pass. Thirty-two candidates were examined, 27 of whom passed and 5 failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
College of Medical Evangelists		(1934)	77.3
Yale University School of Medicine	(1932) 84.1,	(1933)	77
George Washington University School of Medicine		(1934)	78.2*
Georgetown University School of Medicine		(1934)	80.5*
University of Kansas School of Medicine		(1933)	83.6
Johns Hopkins University School of Medicine		(1932)	75
University of Maryland School of Medicine and College of Physicians and Surgeons		(1933)	75.1, 79.5*
Boston University School of Medicine		(1934)	75*
Tufts College Medical School		(1933)	75, 77.1, (1934) 75,* 76.9,* 77.1,* 77.2,* 79.6, 81.6*
Creighton University School of Medicine		(1933)	75
Columbia University College of Physicians and Surgeons		(1923)	80.1, (1932) 83.4
Long Island College of Medicine		(1934)	77,* 82.4*
New York University, University and Bellevue Hospital Medical College		(1934)	75.8
Syracuse University College of Medicine		(1933)	77.3
Marquette University School of Medicine		(1934)	81.8
McGill University Faculty of Medicine		(1933)	75*

School	FAILED	Year Grad.	Per Cent
Georgetown University School of Medicine		(1932)	66.9
Boston University School of Medicine		(1933)	70
Tufts College Medical School		(1934)	71.8
Laval University Faculty of Medicine		(1933)	62.5
Osteopath †			67

Twenty physicians passed the oral examination held in Hartford, November 27, for endorsement applicants. The following schools were represented:

School	PASSED	Year Grad.	Endorsement of
Yale University School of Medicine	(1923),* (1924) (1928) Indiana, (1931), (1932),* (1933, 2)		N. B. M. Ex. New York,
George Washington University School of Medicine		(1931)	New York
Baltimore Medical College		(1904)	Mass.
Johns Hopkins University School of Medicine		(1929)	N. Carolina
University of Maryland School of Medicine and College of Physicians and Surgeons		(1931)*	Maryland
Tufts College Medical School		(1933)	N. B. M. Ex.
Detroit College of Medicine and Surgery		(1915)*	Michigan
Columbia Univ. College of Physicians and Surgeons		(1899)*	New York, (1927)* N. B. M. Ex.
Long Island College Hospital		(1929)	New York
University of Buffalo School of Medicine		(1931)	*N.B.M.Ex.
University of Oregon Medical School		(1930)	N. B. M. Ex.
Vanderbilt University School of Medicine		(1909)	New York
University of Virginia Department of Medicine		(1927)	*N.B.M.Ex.

* License has not been issued.
† Examined in surgery only.

Texas November Report

Dr. T. J. Crowe, secretary, Texas State Board of Medical Examiners, reports the written examination held in Galveston, Nov. 20-22, 1934. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. Twelve candidates were examined, all of whom passed. Thirty-nine applicants were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Louisiana State University Medical Center		(1934)	86.4
Harvard University Medical School		(1929)	88
University of Oklahoma School of Medicine		(1934)	87.9, 90.2
Jefferson Medical College of Philadelphia		(1930)	85.3
Baylor University College of Medicine		(1934)	87.5
University of Texas School of Medicine		(1934)	86.1
Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg, Baden, Germany		(1932)*	85.3
Regia Università di Napoli Facoltà di Medicina e Chirurgia		(1923)*	79.9, (1925) 76.6
Kiev Medical Institute		(1923)*	87.1
Osteopath†			79.3

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
College of Physicians and Surgeons, Arkansas		(1911)	Arkansas
Univ. of Colorado School of Medicine		(1919), (1931), (1933)	Colorado
Georgia College of Eclectic Medicine and Surgery		(1911)	Georgia
University of Illinois College of Medicine		(1934)	Illinois
Central College of Physicians and Surgeons, Indiana		(1903)	Indiana
University of Kansas School of Medicine		(1912)	Kansas
Louisiana State University Medical Center		(1934)	Louisiana
Tulane Univ. of Louisiana School of Medicine		(1921), (1925)	Louisiana
Tufts College Medical School		(1915)	New York
University of Michigan Medical School		(1925)	Michigan, (1931) Minnesota
Mississippi Medical College		(1912)	Mississippi
Ensworth Medical College, Missouri		(1893)	Missouri
Washington University School of Medicine		(1933)	Missouri
Creighton University School of Medicine		(1933)	Nebraska
Cornell University Medical College		(1907)	New York
Miami Medical College, Ohio		(1899)	Ohio
University of Oklahoma School of Medicine		(1926)	Oklahoma
University of Pennsylvania School of Medicine		(1925)	N. Dakota
Memphis Hospital Medical College		(1905)	Oklahoma, (1908) Louisiana
University of Tennessee College of Medicine		(1931), (1932)	Tennessee
Univ. of the South Medical Department, Tennessee		(1900)	Louisiana
University of Virginia Department of Medicine		(1933)	Virginia
Marquette University School of Medicine		(1925)	Wisconsin
University of Western Ontario Medical School		(1929)	Maryland
Osteopaths† Iowa, Kansas, 2, Michigan, Missouri, 3, Oklahoma, West Virginia			

* Verification of graduation in process.
† Licensed to practice medicine and surgery.

Indiana Reciprocity Report

Dr. William R. Davidson, secretary, Indiana State Board of Medical Registration and Examination, reports 32 physicians licensed by reciprocity during 1934. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University School of Medicine		(1931)	Maryland
Emory University School of Medicine		(1929)	Georgia
University of Georgia Medical Department		(1924)	Georgia
Northwestern University Medical School		(1929)	Ohio, (1932) California
Rush Medical College		(1929)	S. Dakota
School of Medicine of the Division of the Biological Sciences		(1932)	Michigan
University of Illinois College of Medicine		(1929)	California
State University of Iowa College of Medicine		(1927), (1932)	Iowa
University of Kansas School of Medicine		(1926)	Kansas
University of Louisville School of Medicine		(1932)	Mississippi, (1931), (1932, 2), (1933) Kentucky
Detroit College of Medicine and Surgery		(1932)	Michigan
University of Michigan Medical School		(1929), (1930, 2), (1931), (1932)	Michigan
New York University, University and Bellevue Hospital Medical College		(1929)	Iowa
Syracuse University College of Medicine		(1924)	New York
Eclectic Medical Institute, Ohio		(1893)	Ohio
Ohio State University College of Medicine		(1932), (1933)	Ohio
University of Cincinnati College of Medicine		(1929), (1933)	Ohio
Jefferson Medical College of Philadelphia		(1932)	Penna.
University of Pittsburgh School of Medicine		(1929)	Penna.
University of Tennessee College of Medicine		(1931)	Tennessee

Book Notices

The Compleat Pediatrician: Practical, Diagnostic, Therapeutic and Preventive Pediatrics for the Use of Medical Students, Internes, General Practitioners, and Pediatricians. By Wilburt C. Davison, M.A., D.Sc., M.D., Professor of Pediatrics, Duke University School of Medicine. Adaptation of the Title Page of The Compleat Angler by Izaak Walton, 1653. Cloth. Price, $3.75. Various pagination. Durham, N. C.: Duke University Press, 1934.

This author has audited pediatrics. He has published his statement in the form of a modified thesaurus, encyclopedia, index and telephone directory combined. The material within the individual chapters is arranged alphabetically. Each subject is a serially numbered section with black faced title, all caps subtitles, first letter caps for subdivisions, lower case letters for supporting material, and daggers, dashes and asterisks to designate the frequency of a symptom or disease, besides small black faced material, numbered and lettered subheads, tabulations, prescriptions and recipes. The chapters include first a short but explicit road map type of description telling how to use the book. Then follow chapters on symptoms and signs, diseases, differential diagnosis and treatment, preventive measures, administration of fluids and blood, feeding and special diets, drugs and prescriptions and finally laboratory methods. The pages are not numbered. For greater facility in using the book as a rapid fire reference work the author has wisely chosen to number the sections. The last section is numbered 1957, although there are not 1957 sections in the book. For instance, the chapter on symptoms has sections 1-79; diagnosis and treatment, 100-900; prevention, 1300-1390; fluids, 1401-1425; diets, 1501-1595; drugs, 1601-1773; laboratory methods, 1801-1957. However, the preface and introduction are designated pages i to v. There are innumerable cross references.

The scope of pediatrics has been ingeniously reduced to mathematics. The author says that there are 307 conditions, of which only 100 are important. Of these, thirty-seven, which cause 56 per cent of the deaths in children, can be prevented. The sixty-three responsible for 21 per cent of pediatric deaths respond to adequate therapy. He insists that every doctor can diagnose and treat successfully the sixty-three curable as well as twenty of the thirty-seven preventable. The other 207, causing 23 per cent of the deaths, can be diagnosed, but since the patient succumbs or recovers regardless of therapy, he feels that they may be disregarded.

From this analysis it is readily seen that the author has nailed down the pinpoints of pediatrics. The chapters on symptoms and diagnosis contain the essential facts, but the tabulations are too brief and stacatto to give a picture of disease. The student cannot learn pediatrics for the first time from this kind of work. Nevertheless the sections on treatment, fluids, diets, prescribing and laboratory methods are invaluable. The author has succeeded in his intention to concentrate all the facts and helps in pediatrics in an extremely simple way, so that his comparatively tiny work might well be used as a rapid reference work in the office and as a great help in the bag. The cover is light colored cloth and should be covered with oilcloth, as it will not stand the mussy hands that will constantly thumb its pages.

The author has gone to Izaak Walton for the inspiration of his title and the appearance of his title page. He must have had a lot of fun compiling this cross index pediatricus. There is nothing else like it in English.

Principles in the Treatment of Inflammation. By T. E. Hammond, F.R.C.S., Assistant Surgeon, The Royal Infirmary, Cardiff. Cloth. Price, 10/6. Pp. 209. London: H. K. Lewis & Company, Ltd., 1934.

The thesis of this book is just the opposite of the theses so generally and fulsomely exploited at "commencement day" orations. These lead the medical neophyte to believe that the "wonderful" progress of medicine has made him master over disease and that he is now entering on a victorious career of curing human ills. This book, by a World War military surgeon and seasoned clinician, might be recommended as a good antidote to the dangerous cocksureness thus engendered. Hammond points out that physicians do not understand it all, "that disease generally arises we know not why," and that much depends on the patient's "constitution," a matter about which little is known. "In few diseases has treatment been more irrational than in inflammations. Inflamed fingers are still immersed in antiseptic solutions, though few believe that these have any action and some even think that they do harm. But few are prepared to say so, as it is felt that, where the work of Lister is concerned, this amounts to blasphemy. The practitioner is too often governed by the feeling that he must do something. He is afraid that his reputation is at stake if the case comes to the postmortem room without something having been done, for some one may suggest that the patient would have lived had an incision been made. It is apt to be forgotten that an incision at the wrong time jeopardizes many a life, for it flares up the disease and takes away the patient's only chance. Had nature been left alone, the life might have been saved. Resistance is the most important factor in the cure of bacterial disease. There is a definite risk in incising before pus has formed. Curettage of sinuses is being abandoned as the results are so poor. In incomplete abortion a foreign body is beneficially removed by curettage of the uterus. Otherwise . . . the operation is simply a money-making stunt. . . . It may be necessary to remove the tonsils and adenoids if they obstruct respiration or if they are full of pus. Otherwise it should be kept in mind that tonsils and adenoids become enlarged only when the resistance factor is impaired. It is much better to direct treatment toward the cause of their enlargement. . . . It is just as rational to attempt to cure gout by removing a uratic deposit as it is to try to cure a patient of chronic bacterial disease by removing the affected organ. . . . Today ability to operate is being confused with the practice of surgery." A thoughtful perusal of this book, dedicated to "the Battalion Medical Officers of the Great War," possibly not without a certain amount of grim humor, would go a long way toward making surgery more rational and safer.

The author laments that he can discover in recent work so little of value at the bedside of the patient. "Scientists forget that they are working on animals in whom disease is artificially induced. Before it started, the constitution was sound and the resistance factor was adequate. When this is the case recovery takes place as soon as the exciting cause ceases to act. If scientists want a disordered constitution on which to experiment, why do they not go to sick animals? There are any number of these. . . . When scientists can put right animals in whom disease has appeared as in man we know not why, the medical profession will listen more eagerly to their claim. . . . Much of our failure today no doubt is due to the fact that research workers have left the bedside of the patient and are now content to work in laboratories."

The Pneumonokonioses (Silicosis): Bibliography and Laws. By George G. Davis, M.D., Associate Clinical Professor of Surgery, Rush Medical College, University of Chicago, Ella M. Salmonsen, Medical Reference Librarian, The John Crerar Library, Chicago, and Joseph L. Earlywine, Attorney at Law, Chicago. With a foreword by E. R. Le Count, M.D., Professor and Chairman, Department of Pathology, Rush Medical College, University of Chicago. Cloth. Price, $7.50. Pp. 482. Chicago: Industrial Medicine, Inc., 1934.

Agricola in 1556 referred to dusts in his "De re metallica"; likewise, late in December 1933, Sappington commented on the problems of dust in relation to disease. In the intervening 377 years at least 2,766 other publications were made, related directly or indirectly to the influence of dusts on living organisms. The citation of these hundreds of publications with many types of cross references, together with a large section devoted to compensation laws, make up the contents of this large publication. By its authors it is described as "a reference book designed for the permanent convenience of physicians, surgeons, lawyers, industrial executives, librarians, journalists, engineers, trade association officials, student and research workers." The amount of labor expended manifestly was enormous—perhaps out of proportion to the extent to which the book will be applied. For the industrial hygienist, whether physician, engineer or other public health worker, the book provides both a historical background and the most recent concepts as to the significance of the various types of dusts in human economy. For attorneys connected with the adjudication of claims for dusty lung diseases, it will furnish data on almost any conceivable aspect of such disorders. Librarians will be saved many hours of compilation work through the presence of the book on

their shelves. For the average practitioner who does not delve into medical history and who may not be concerned with dusty lung diseases, it holds no promise of great usefulness. A thorough reading of the book alone will in no wise equip a physician either to recognize or to control silicosis or any other form of pneumoconiosis. The volume is what it purports to be—a pure bibliography, with citations of compensation laws. At the outset it gets off to a bad start through the language of its title. Although silicosis is the chief form of pneumoconiosis, it is improper to imply, as the title does, that "silicosis" is "the pneumonokonioses" or vice versa. Such ambiguities naturally are the outgrowth of the compilation of highly technical materials jointly by a professor of surgery, a medical librarian and an attorney at law.

Prolapsus du rectum: Etude clinique, traitement, résultats éloignés. Par Carrasco. Préface du Professeur Hartmann. Paper. Price, 35 francs. Pp. 196, with 41 illustrations. Paris: Masson & Cie, 1934.

This monograph, by a former assistant of Professor Hartmann, reviews the subject of prolapse of the rectum from the year 1903, when Lenormant's thesis on the same subject was published. The work is well printed and illustrated and has a large bibliography. The various types of prolapse and the pathologic and anatomic factors favoring their origin are those commonly accepted and described in all textbooks. A great variety of methods of treatment are described and illustrated, and in many instances mortality figures and end results are given. Unless one had had considerable personal experience in selection of the method of treatment, the variety of suggestions would be confusing. Cauterization, injection of sclerosing substances, methods of excision and suspension and plastic operations on the perineum are all considered under operative treatment. Many case reports illustrate the methods used. The conclusions of the author are excellent and are the only truly authoritative matter in the monograph. He emphasizes the fact that prolapse of the rectum in children is generally of the mucosa alone and will heal itself spontaneously in most instances if conservative management is adopted, with particular attention to proper elimination and diet. In adults, however, conservative management usually fails and more radical measures are necessary. Proper selection of measures depends naturally on the type of prolapse, the etiologic factors in existence, and the condition of the patient. Here one may choose from many operations. The multiplicity of methods indicates that not all is well with the results. For intussusception of the sigmoid into and through the rectum, some type of abdominal suspension and obliteration of the culdesac is necessary. In mucosal prolapse or true prolapse of the rectum the method described by Delorme and Rehn has given excellent results. However, the choice of many types of excision of mucosa, suspension of the bowel or plastics on the perineum are given. The monograph makes itself an excellent book of reference on the subject.

Diseases of the Rectum and Colon and Their Surgical Treatment. By J. P. Lockhart-Mummery, F.R.C.S., M.A., M.B., Senior Surgeon to St. Mark's Hospital for Cancer, Fistula and Other Diseases of the Rectum, etc. Second edition. Cloth. Price, $10. Pp. 605, with 250 illustrations. Baltimore: William Wood & Company, 1934.

During the eleven years that elapsed since the last edition of this work, knowledge of the diseases of the rectum and colon has shown extensive advances, particularly in the field of pathogenesis and treatment of various lesions of this portion of the alimentary tract. Hence a large part of the book had to be entirely rewritten; several new chapters have been added, one of them dealing with precancerous conditions. The arrangement of the subjects described has been altered in such a manner that the first part of the book is devoted to diseases of the rectum and anus, while diseases of the colon have been placed in the second part. A new feature consists of photographic reproductions of operations. The advantage of such illustrations over schematic drawings is subject to discussion. The book represents mainly a record of the author's own experience, and this fact must be kept in mind when noting that certain lesions are not mentioned at all or are described in an inadequate manner; for instance, an American reader will miss chapters on amebic dysentery and lymphogranuloma inguinale; among fluids used for injections of hemorrhoids, quinine-urea and sodium morrhuate are not mentioned; recent advances in the surgery of the cancer of the large intestine, e. g., the use of vaccine for prevention of postoperative peritonitis, as well as new technical details, did not receive due consideration. However, such omissions are comparatively slight and do not detract from the value of this authoritative work, which is profusely illustrated and contains a wealth of valuable material, presented in lucid sequence and a concise manner by a man with a large experience in this field.

Strümpell-Seyfarth Lehrbuch der speziellen Pathologie und Therapie der inneren Krankheiten für Studierende und Ärzte. Bände I-II. Von Dr. med. et phil. C. Seyfarth, a. o. Professor (für innere Medizin) an der Universität Leipzig. Thirty-first and Thirty-second edition. Paper. Price, 48 marks. Pp. 880, with 191 illustrations; 980, with 225 illustrations. Berlin: F. C. W. Vogel, 1934.

Since the death of Adolf Strümpell in 1925, this most popular German textbook of internal medicine has been edited and revised by his former co-worker Seyfarth. It seems that the old "Strümpell" has lost nothing of its popularity, as seven new editions were necessary after Strümpell's death. The thirty-first and thirty-second editions contain a few newly written chapters, and others partially rewritten and brought abreast of the latest state of our knowledge. Among them may be mentioned Bang's disease and tularemia, with special emphasis and reference to the bacteriologic examination, and hypertension and hypotension, in which the futility and also the dangers of some therapeutic measures are stressed. There is a brief chapter on Buerger's disease. In the treatment of peptic ulcer, alkalis and atropine still maintain their important place. Excellent therapeutic results are reported by the author with the feeding experiments through the permanent duodenal tube in more than 300 cases of peptic ulcer. Osteitis fibrosa (Recklinghausen) and osteitis deformans (Paget) are taken up as strictly separate diseases, the former being due to parathyroid disorder and characterized by the disturbance in the calcium metabolism, while the latter is of unknown etiology without any disturbance of calcium metabolism and not influenced by parathyroidectomy. The chapters on psychoneurosis, hysteria and neurasthenia are fully revised and thoroughly discussed. The last chapter deals with intoxications. In order, perhaps, to make a modern German textbook of internal medicine complete, this chapter contains a section on war gas poisoning with a classification of the poisonous gases used during the last war and a thorough description of the symptoms and therapeutic measures.

The Heart Visible: A Clinical Study in Cardiovascular Roentgenology in Health and Disease. By J. Polevski, M.D., Attending Physician and Cardiologist, Newark Beth Israel Hospital. Cloth. Price, $5. Pp. 207, with 122 illustrations. Philadelphia: F. A. Davis Company, 1934.

This small volume, intended by the author for the roentgenologist, cardiologist and clinician, has in it much of value and fills a definite hiatus in the American literature. It offers an intelligent compendium for the cardiologist or clinician who finds it inconvenient to consult the foreign textbooks or review the extensive scattered literature in English. Dr. Polevski covers the details of the normal and abnormal roentgen observations of the heart, pericardium and great vessels. He also explains clearly the technical procedures involved in making a comprehensive roentgen examination of the heart and great vessels. He has an adequate conception of what can be elicited by this method and a proper deference to the importance of correlations with clinical examinations. The material that he offers is sound, but in several instances one might take exception to the views propounded. The terms "mitral" and "aortic" heart are used loosely. It is not advantageous to divide all abnormal heart contours into these two types, as the author himself admits. Too much significance is attached to the small heart, especially in view of the fact that true hypoplasia is a relatively rare condition. A certain looseness of expression that leads to such description as the "unexpanded lungs of infancy" and "fatty infiltration of the myocardium" is to be deplored. Exception can be taken to the author's explanation of a decrease in inspiratory size of failing hearts as partly due to the compressing effects of the expanding lung on the heart. The ideas expressed by the author that the "darkness" of the shadow of the syphilitic aorta is due in part to atheromatosis of wall and that erosions caused by aneurysm simulate the spine of caries

cannot be accepted without qualification. However, these minor faults do not detract from the general excellence of the book. It would have been better if the illustrations had been negatives and not positives, but they are relevant and are adequate for the text.

Infantile Paralysis. By George Draper, M.D., Associate Professor of Clinical Medicine, College of Physicians and Surgeons, Columbia University. Cloth. Price, $2. Pp. 167, with 24 illustrations. New York & London: D. Appleton-Century Company, Inc., 1935.

The author of this book is well known for his splendid contributions to the study of constitution and its relation to disease. Few other medical authors are better qualified by virtue of medical training and philosophic background to present to the intelligent lay public a short and comprehensive discussion of a subject so diverse in its manifestations. This is not an ordinary treatment of the subject but a scholarly and dispassionate presentation filled with useful scientific information about the disease and punctuated with enough philosophical reflection so that the reader not only learns but gains a certain amount of reassurance. The author has anticipated the numerous questions which the lay reader will want to know concerning the nature of the disease, its prevention, and what can be done after the disease is contracted. Any treatise written by this author without consideration of aspects of inherent susceptibility would be to the reader's loss. However, this subject is clearly presented in his discussion of individual susceptibility. Here he considers that mysterious property possessed in varying degrees by every individual, the presence of which endows resistance and the absence of which invites infection. In the final chapter, on the outlook and the healing, Dr. Draper gives a lucid exposition to the usual questions asked by the parents of a child afflicted with the disease. The book is highly recommended to the public as an authoritative and scholarly account of infantile paralysis as well as a textbook that will meet needs of parents whose children have become afflicted.

Fundamentals of Dairy Science. By Associates of Lore A. Rogers, in the Research Laboratories of the Bureau of Dairy Industry, United States Department of Agriculture. American Chemical Society, Monograph Series. Second edition. Cloth. Price, $6. Pp. 616, with illustrations. New York: Book Department, Reinhold Publishing Corporation, 1935.

This scientific and technological monograph, prepared by present or former members of the staff of the Research Laboratories of the Bureau of Dairy Industry and published under the auspices of the American Chemical Society, presents to advanced students and research workers a well digested survey of more important knowledge in the field of dairy science, basic data, fundamental observations, and unbiased discussions of research. The subject matter is arranged so as to bring together topics of similar scientific classification rather than under the usual headings of specific dairy products, part I being devoted to the constituents of milk, part II to the physical chemistry of milk and milk products, part III to the microbiology of milk and milk products, and part IV to the nutritional value of milk and milk products, and the physiology of milk secretion. The monograph should stimulate, guide and facilitate research along those lines in dairy science which need most development to maintain a proper balance of knowledge in the whole field. To each chapter is appended a list of important references to the literature. This work will be a valuable addition to the reference libraries of all interested in the present scientific status of dairy science.

Die Serum-β-Lysine und die antibakterielle Immunität gegen die davon beeinflussten Mikroben. Von Professor Dr. Alfred Pettersson, Karolinisches Institut, Stockholm. Paper. Price, 5 marks. Pp. 75. Jena: Gustav Fischer, 1934.

This monograph deals with bactericidal substances in serum that differ from the bacteriolysins mainly in being more resistant to heat. The author, who has done a great deal of work on these substances, calls them serum-β-lysins to distinguish them from the less heat resistant lysins, which he calls serum-α-lysins. The properties of the serum-β-lysins, the bacteria that are susceptible to their action, and the immunity against some of these bacteria are discussed. The monograph will interest all those who are working with the bactericidal actions of the blood and its components. The literature in question is reviewed thoroughly.

Cataract: Its Etiology and Treatment. By Clyde A. Clapp, M.D., F.A.C.S., Associate Professor of Ophthalmology, Johns Hopkins University. Cloth. Price, $4. Pp. 254, with 92 illustrations. Philadelphia: Lea & Febiger, 1934.

The author has assembled the pertinent facts pertaining to the lens and arranged the material in a logical sequence. Dr. Ida Mann has written the first and second chapters, on the development and comparative anatomy of the lens. The foregoing, with the material on anatomy, growth, physiology, chemistry and anomalies, are contained in the first seven chapters (about one fourth) of the book. The remaining eighteen chapters deal with cataracts. The author in turn writes of the pathogenesis of all cataracts and discusses congenital, traumatic, secondary, complicated and senile cataracts. He outlines but gives little credence to the nonoperative treatment of cataracts. The remainder of the book, except for chapter XVI, which is on couching and is of historical interest, and the last two chapters, on dislocations of the lens and on aphakia with its treatment, deals with the various types of cataract operations as well as the preparation for the operation and the postoperative care. He has included the electrodiaphaque method of Lacarrere. There are numerous illustrations of the various methods of suturing. In the chapter on anesthesia he gives the various methods for producing akinesis, but the technic for this important procedure is too brief. In the preface the author states that a complete bibliography has not been attempted. The work is distinct and significant and one can readily agree with Dr. Wilmer, who in his foreword wrote: "Dr. Clapp has succeeded admirably in a very difficult task of placing between these covers a vast amount of interesting and useful information. It should be welcomed by students and by practitioners of ophthalmology."

Tests for Respiratory Efficiency. By Alan Moncrieff. Medical Research Council, Special Report Series, No. 198. Paper. Price, 1s. Pp. 62, with 7 illustrations. London: His Majesty's Stationery Office, 1934.

The demand for clinical and laboratory methods for quantitative evaluation of functional efficiency of organs or systems is in ever increasing demand. Both surgeon and physician desire to assess the degree of impairment with which they have to deal. In this monograph the author sets forth in a concise manner the various methods employed in testing respiratory efficiency. He concludes that no one test can be relied on and that in order to gain a useful estimate of respiratory function the patient's vital capacity, ventilating efficiency and expiratory force must all be studied. The author does not settle the question, but his work is critical and stimulating. It will be read with interest by all those interested in estimating the efficiency of the respiratory apparatus. The report will be of special interest to those engaged in insurance work and those concerned with passing on the medical qualifications of individuals in occupations involving strain on the respiratory systems, as aviators, deep sea divers, and athletes engaging in competitive sports.

F. J. Shepherd—Surgeon: His Life and Times. By William Boyman Howell. Cloth. Price, $3.50. Pp. 251, with illustrations. Toronto & Vancouver: J. M. Dent & Sons, Ltd., 1934.

About Dr. Shepherd as a central figure, Dr. Howell has constructed in an interesting manner the story of medical practice and institutions in Montreal during the period from 1869 to 1929. With the substitution of different names, the same narrative might be applied to the course of medical affairs in other cities of Canada and in numerous ones in the United States. At the beginning of this period, medical schools in America were inferior to those in Europe, and the teachers were usually general practitioners who expected their positions to aid them in their private business. Among these teachers were some talented and determined young men who, like Dr. Shepherd, continuously worked for the gradual betterment of medical education and medical institutions. Dr. Shepherd was an enthusiastic teacher of anatomy for more than thirty years. Like him, most of the surgeons of the last quarter of the nineteenth century came up through anatomy. These younger men were the ones who accepted and applied antiseptic and aseptic methods, and they had the courage and skill to extend the field of operative surgery to the internal cavities of the body. Dr. Shepherd's birth and early life in the country gave him an

opportunity to develop a love for natural beauty and a fondness for fishing. The former shows in his interest in art and in his large private collection of critically selected pictures. He traveled extensively and was an active participant in medical societies at home and abroad. Dr. Howell has performed a valuable service in outlining so well the trend in America of medical matters during the last quarter of the nineteenth and the first quarter of the twentieth century and in giving such a satisfactory glimpse of conditions and persons in Europe at the same time. He has been fortunate in having as his central figure a man who so well exemplified what was best among his contemporaries. The volume closes with a list of the writings of Dr. Shepherd and an excellent index.

Poliomyelitis: A Handbook for Physicians and Medical Students Based on a Study of the 1931 Epidemic in New York City. By John F. Landon, M.D., Attending Physician, Willard Parker Hospital, New York, N. Y., and Lawrence W. Smith, M.D., Pathologist, Willard Parker Hospital, New York, N. Y. With a section on the Orthopedic After Care of the Disease. By Garry deN. Hough Jr., M.D., F.A.C.S., F.A.A.O.S., Attending Orthopedic Surgeon, Shriners' Hospital for Crippled Children, Springfield, Mass. Cloth. Price, $3. Pp. 275, with 18 illustrations. New York: Macmillan Company, 1934.

The aim of this book is to present a short treatise on the subject of poliomyelitis, chiefly for the physician in practice. While a number of textbooks are available on this subject, few works present the modern developments of the knowledge of this disease in such a comprehensive and compact form. The data presented are recent and carefully evaluated with the background of an exceptionally large clinical and pathologic experience in the epidemic of poliomyelitis that occurred in New York City in 1931. The book treats almost every phase of the subject in a scholarly and impartial manner. The chapter on pathology is particularly lucid and is based on the data obtained from nearly 100 postmortem examinations. The text is well illustrated and contains a valuable list of current bibliographic references. The modern aspects of treatment, such as serum therapy, the use of respirator and after-care, are carefully evaluated from a practical point of view. The appendixes on nursing care, aseptic technic and methods of serotherapy are a valuable addition. The book is highly recommended to the practitioner and student of medicine as a concise and practical handbook on the subject of poliomyelitis.

On Serological Tests for Syphilis with Very Small Amounts of Patient's Serum. By E. J. Wyler, M.C., M.D. Reports on Public Health and Medical Subjects, No. 74. Ministry of Health. Paper. Price, 6d. Pp. 26, with 3 illustrations. London: His Majesty's Stationery Office, 1934.

In this bulletin the author, who is chief serologist in the Ministry of Health, gives technical details for performing the Wassermann test as previously described by the same author, the Kahn test, the Meinicke test and the recently reported Rosenthal method, by using minute amounts of serum. Microtechnics are desirable in the case of infants, from whom it is often difficult to obtain amounts of blood sufficient for regular tests. The bulletin should be of interest to laboratory workers.

The Practitioners Library of Medicine and Surgery. Volume VII: Pediatrics. [George Blumer, supervising editor.] Cloth. Price, $10. Pp. 1211, with illustrations. New York & London: D. Appleton-Century Company, Inc., 1935.

Since pediatrics is essentially internal medicine as applied to the child, much of the material in this book duplicates information already made available in some of the previous volumes of this excellent system. However, the approach to each of the subjects is made from a special point of view and the studies are necessarily chosen from the field concerned. The volume is therefore a most useful one and constitutes virtually a textbook on pediatrics written particularly with the general practitioner in mind. The various chapters concern the development of the child and its hygiene, nutrition and diets, and thereafter a consideration of the diseases of the child classified according to the body system and organs, proceeding then to discussions of the various infectious diseases, and concluding with poisoning and worm infestation. This volume, more than previous contributions, lacks adequate illustration. It is, however, excellent in its discussions and quite up to date. The classic outlines of Osler are followed in the systematic approach to the various topics. Each of the chapters is supplemented by bibliographic notes.

An Atlas of Infant Behavior: A Systematic Delineation of the Forms and Early Growth of Human Behavior Patterns. By Arnold Gesell, Ph.D., M.D., Sc.D., Director of the Clinic of Child Development and Professor of Child Hygiene in Yale University. Volume I: Normative Series. In collaboration with Helen Thompson, Ph.D., and Catherine Strunk Amatruda, M.D. Volume II: Naturalistic Series. In collaboration with Alice Virginia Keliher, Ph.D., Frances Lillian Ilg, M.D., and Jessie Jervis Carlson, Ph.D. Leather. Price, $25 per set of 2 volumes. Pp. 921, with 3,200 illustrations. New Haven: Yale University Press, 1934.

The authors of this work have charted the behavior of the infant with some 3,000 photographs. Thus they indicate his various postures, his use of his senses, his relationships to his environment, and the gradual growth of his compliance with social custom and manner. For the purpose a photographic dome was prepared especially equipped with the necessary materials. It thus becomes possible for physicians, psychologists, biologists and others to study in the minutest detail the development of the infant physically and mentally.

The second volume concerns the natural day of an infant under conditions in the home, giving in the minutest detail the steps involved in spoon feeding and breast feeding, also the use of the bottle and the cup, the bath, the baby's play, and its progress in walking, growth and in other ways. The interested professions will find many uses for this material.

Miscellany

NUMBER AND GEOGRAPHIC LOCATION OF NEGRO PHYSICIANS IN THE UNITED STATES

JULIAN H. LEWIS, PH.D., M.D.
CHICAGO

For a special purpose I recently accumulated the names, geographic location, medical school and year of graduation for the Negro physicians practicing in the United States in 1932. The facts were obtained from the most recent directory of the American Medical Association and from graduation lists from the various universities. The resulting data, when compared with similar information for the general population, present some interesting similarities and contrasts.

Nearly 12 million people, or about 10 per cent of the population in the United States, are classified as Negroes, whereas only 4,000, or 2.5 per cent, of the licensed physicians in the country are Negroes. There is one Negro physician for each 3,000 Negroes, based on the 1930 census data, as compared with a ratio of 785 persons per physician for the United States as a whole.

TABLE 1.—*Number and Percentage of Negro and White Population and Physicians in the United States in 1932 and Population per Physician*

	Physicians		Population		Population per Physician
	Number	Per Cent	Number	Per Cent	
Negro	3,985	2.5	11,900,613	9.7	2,988
White	152,545	97.5	110,886,903	90.3	727
Total	156,530	100.0	122,787,516	100.0	785

The Negro physicians are unevenly distributed throughout the country, as compared with the Negro population. Although the Southern states contain more than 85 per cent of the Negro population, scarcely 60 per cent of the licensed Negro physicians practice medicine in this area. The ten Northern states with 30,000 or more Negroes have only 18 per cent of the Negro population but nearly 40 per cent of the Negro physicians.

From the Otho S. A. Sprague Memorial Institute and the Department of Pathology, University of Chicago.

The ratio of Negro population per physician is 3,824 in the Southern states, but there is considerable variance among them. Mississippi has one Negro physician to each 14,000 Negroes. This is followed by ratios of approximately 9,600 for South Carolina, 8,000 each for North Carolina and Alabama, 6,700 for Louisiana, and 5,500 for Georgia. In contrast, the following Southern states show larger proportionate numbers of Negro physicians among the Negro population: The ratio of Negro population per physician is 1,500 for Tennessee, 1,000 for Missouri, and less than 500 for the District of Columbia.

Among the ten Northern states with 30,000 or more Negroes the ratio of Negro population per physician averages about 1,600 to 1. Illinois leads with 332 Negro doctors and is the only state with a ratio of less than 1,000 Negro population per physician. The states of Pennsylvania and New York show much less concentration of Negro physicians, with ratios of 2,552 and 2,281 respectively. The four states Pennsylvania, Ohio, New York and Illinois contain about 2,000,000 Negroes and 900 Negro physicians. The states of Georgia, Mississippi, Alabama and North Carolina contain twice as large a Negro population and but half as many Negro physicians.

There is a concentration of Negro physicians in large cities, both in the North and in the South, regardless of whether there is a proportionately large Negro population. The three cities in the United States with more than 200,000 Negro population are New York, Chicago and Philadelphia, with ratios respectively of 2,200, 800 and 2,100 Negroes per physician. Next in line as to Negro population are Baltimore, Washington, D. C., and New Orleans, generally regarded as Southern cities, with ratios respectively of 1,700, 500 and 2,400. Partly because of the location of Howard University, Washington, D. C., has nearly twice as many Negro physicians as New York, although it has scarcely one-third as large a Negro population. Likewise, Nashville, Tenn., with 40,000 Negroes, the home of Meharry Medical College, has seventy-seven Negro physicians, although New Orleans, with a Negro population of 130,000, reported fifty Negro physicians in 1932.

A number of large Northern cities with very limited Negro populations report ratios of less than 1,000 Negro population per physician. Among these cities are Los Angeles; Oakland, Calif.; Denver; Portland, Ore.; Spokane, Wash.; Buffalo; Erie and Scranton, Pa., and Milwaukee.

Most of the 4,000 Negro physicians practicing in 1932 were graduates of Southern medical schools. Of the total, 69 per cent came from Meharry Medical College and Howard University. Another 11 per cent were from various Southern medical schools, most of which are now out of existence. Northern medical schools graduated 14 per cent, and for 6 per cent the names of the institutions were not determined from the study.

From the available data, certain general statements appear to be justified concerning the number and location of Negro physicians. There are about one fourth as many Negro physicians for the population as total physicians for the total population. If the Negro population were dependent exclusively on the services of Negro physicians, it would be impossible for them to receive adequate medical care.

Negro physicians tend to concentrate in the large cities, regardless of whether there is a proportionate concentration of Negro population. This is true for both Northern and Southern cities, although there are many more Negro doctors proportionately in the Northern states and cities. The ratio of Negro physicians to population is lower in every state and city than the ratio of total physicians to total population.

950 East Fifty-Ninth Street.

TABLE 2.—*Negro Population, Negro Physicians and Population per Physician, According to Geographic Areas, and in Cities with More Than 50,000 Negro Population in 1932*

	Negro Population 1930	Negro Physicians	Population per Physician
Seventeen Southern states*	9,562,815	2,501	3,824
Ten Northern states with 30,000 or more Negro population†	2,171,827	1,382	1,571
Twenty-two other states	165,971	102	1,627
Total	11,900,613	3,985	2,986
Cities with 50,000 or more Negro population‡	1,877,795	1,329	1,413

* Georgia, Mississippi, Alabama, North Carolina, Texas, South Carolina, Louisiana, Virginia, Arkansas, Tennessee, Florida, Maryland, Missouri, Kentucky, District of Columbia, West Virginia, Oklahoma.
† Pennsylvania, New York, Illinois, Ohio, New Jersey, Michigan, Indiana, California, Kansas, Massachusetts.
‡ Brooklyn and New York, Chicago, Philadelphia, Baltimore, Washington, D. C., New Orleans, Detroit, Birmingham, Memphis, St. Louis, Atlanta, Cleveland, Pittsburgh, Richmond.

TABLE 3.—*Negro Population, Negro Physicians, and Population per Physician in Seventeen Southern States, 1932*

State	Negro Population, 1930	Negro Physicians, 1932	Population per Physician
Georgia	1,071,125	195	5,492
Mississippi	1,009,718	71	14,221
Alabama	944,834	116	8,145
North Carolina	918,647	117	7,852
Texas	854,964	215	3,977
South Carolina	793,681	83	9,562
Louisiana	776,326	116	6,692
Virginia	650,165	185	3,514
Arkansas	478,463	107	4,472
Tennessee	477,646	308	1,551
Florida	431,828	109	3,962
Maryland	276,379	111	2,490
Missouri	233,840	216	1,082
Kentucky	266,040	131	2,031
Oklahoma	172,198	87	1,979
District of Columbia	132,068	271	487
West Virginia	114,893	63	1,824
Total	9,602,815	2,501	3,839

TABLE 4.—*Negro Population, Negro Physicians, and Population per Physician in Ten Northern States Having 30,000 or More Negro Population in 1930*

State	Negro Population, 1930	Negro Physicians, 1932	Population per Physician
Pennsylvania	431,257	169	2,552
New York	412,814	181	2,281
Illinois	328,972	332	991
Ohio	309,304	208	1,487
New Jersey	208,288	139	1,498
Michigan	169,453	117	1,448
Indiana	111,982	79	1,417
California	81,048	75	1,081
Kansas	66,344	35	1,896
Massachusetts	52,365	47	1,114
Total	2,171,827	1,382	1,571

TABLE 5.—*Negro Physicians in Fourteen Cities Having Over 50,000 Negro Population*

City	Population	Physicians	Ratio
Brooklyn and New York	341,269	151	2,260
Chicago	233,903	287	815
Philadelphia	219,599	104	2,111
Baltimore	142,106	85	1,671
Washington, D. C.	132,068	271	487
New Orleans	129,632	53	2,445
Detroit	120,066	68	1,765
Birmingham, Ala.	99,077	28	3,538
Memphis, Tenn.	96,550	70	1,379
St. Louis	93,580	54	1,732
Atlanta, Ga.	90,075	51	1,766
Cleveland	71,899	59	1,219
Pittsburgh	54,983	21	2,618
Richmond, Va.	52,988	27	1,962
Total	1,877,795	1,329	1,413

Medicolegal

Malpractice: Res Ipsa Loquitur; Admissibility of Evidence as to Indemnity Insurance. — The defendant-physician operated on the plaintiff, removing a fibroid tumor and a diseased appendix. The operation was successful and the patient obtained the desired relief. At some time subsequent to the recovery of consciousness, however, a large blister was found on the chest of the plaintiff, for which injury she sued the defendant. The trial court gave judgment for the plaintiff, and the defendant appealed to the Supreme Court of Montana.

The defendant contended, among other things, that the complaint contained only general allegations of negligence, whereas it should have set forth the specific acts or omissions on which recovery was sought. The plaintiff, said the court, sought to avail herself of the doctrine of res ipsa loquitur and in a case in which that doctrine is applicable, general allegations of negligence are sufficient. The doctrine of res ipsa loquitur, continued the court, while not applicable to the ordinary malpractice case, is applicable to the present case, for the reasons given in *Brown* v. *Shortlidge,* 98 Calif. App. 352, 277 P. 134:

> This is not the ordinary case where the practitioner is sought to be charged with liability for alleged improper treatment of some bodily ailment or infirmity. He was employed to remove the adenoids from the plaintiff's throat, and there is neither claim nor proof that he did not successfully remove them. His negligence, if any, was in failing to take due care to avoid injury to the undiseased parts in the vicinity of which the operation was performed; and while it may be true that, had the operation upon the adenoids been unsuccessful and disappointing, no inference of negligence or want of skill would arise therefrom, it does not follow that this rule applies with the same force to an injury done by him to sound and undiseased parts of the plaintiff's person, which he was not called upon to treat and did not pretend to treat.

Where the rule is applicable, it operates to establish a prima facie case for the plaintiff, which, if unexplained, carries the question of negligence to the jury.

The evidence in this case established the fact of the burn but did not explain just how or when it was inflicted. Under the rule of res ipsa loquitur, continued the court, the circumstances proved by the plaintiff were such as to point by fair and reasonable inference to the conclusion that the defendant was guilty of negligence. They were sufficient to take the case out of the realm of conjecture and to support a finding by the jury that the defendant was guilty of negligence. The evidence offered by the defendant tended to rebut the inference arising from the prima facie case established by the plaintiff, but such evidence was not so overwhelming as to cause the presumption of negligence to "fade away in the face of contrary facts" or point to freedom from negligence "with such certainty as to preclude any other reasonable hypothesis."

The defendant vigorously urged that the counsel for the plaintiff was guilty of reversible misconduct in injecting into the case a statement that the defendant was insured. The injection of the insurance issue into damage actions has been repeatedly condemned, said the court. The general rule on the subject is discussed in an annotation to the case of *Stehouwer* v. *Lewis,* 74 A. L. R., 849, as follows:

> The rule is almost universally recognized that in actions for personal injuries or death the fact that the defendant is protected by indemnity insurance against liability for damages cannot, directly or indirectly, be injected into the case by evidence, argument or remarks, so as to influence the jury, and the violation thereof is ordinarily held to be reversible error.

The general rule, however, is subject to the important exception that statements as to insurance protection of a defendant may properly be admitted as a part of a statement which may be fairly construed as an acknowledgment of a responsibility for the wrong charged against him. The present case does not come within the exception, so the general rule applies. In injecting the matter of insurance, therefore, the counsel for the plaintiff erred and thereby prejudiced the defendant's cause. The judgment of the trial court was reversed and the cause remanded for a new trial.—*Vonault v. O'Rourke (Mont.) 33 P. (2d) 535.*

Society Proceedings

COMING MEETINGS

Alabama, Medical Association of the State of, Mobile, April 16-18. Dr. D. L. Cannon, 519 Dexter Avenue, Montgomery, Secretary.
American Association for the Study of Neoplastic Diseases, Baltimore, April 18-20. Dr. Eugene R. Whitmore, 2139 Wyoming Avenue N. W., Washington, D. C., Secretary.
American Association of Anatomists, St. Louis, April 18-20. Dr. George W. Corner, University of Rochester School of Medicine, Rochester, N. Y., Secretary.
American Association of Pathologists and Bacteriologists, New York, April 18-19. Dr. Howard T. Karsner, 2085 Adelbert Road, Cleveland, Secretary.
American Association of the History of Medicine, Atlantic City, May 6. Dr. Edward J. G. Beardsley, 1919 Spruce Street, Philadelphia, Secretary.
American Association on Mental Deficiency, Chicago, April 25-27. Dr. Groves B. Smith, Beverly Farms, Godfrey, Ill., Secretary.
American Bronchoscopic Society, Toronto, Canada, June 1. Dr. Lyman Richards, 319 Longwood Drive, Boston, Secretary.
American College of Physicians, Philadelphia, April 29-May 3. Mr. E. R. Loveland, 133 South 36th Street, Philadelphia, Executive Secretary.
American Dermatological Association, White Sulphur Springs, W. Va., May 2-4. Dr. William H. Guy, 500 Penn Avenue, Pittsburgh, Secretary.
American Gynecological Society, Hot Springs, Va., May 27-29. Dr. Otto H. Schwarz, 630 South Kingshighway, St. Louis, Secretary.
American Laryngological Association, Toronto, Canada, May 29-31. Dr. William V. Mullin, 2020 East 93d Street, Cleveland, Secretary.
American Otological Society, Toronto, Canada, May 27-29. Dr. Thomas J. Harris, 104 East 40th Street, New York, Secretary.
American Pediatric Society, Cleveland, May 2-4. Dr. Hugh McCulloch, 325 North Euclid Avenue, St. Louis, Secretary.
American Physiological Society, Detroit, April 10-13. Dr. Frank C. Mann, Mayo Clinic, Rochester, Minn., Secretary.
American Psychiatric Association, Washington, D. C., May 13-17. Dr. William C. Sandy, State Education Building, Harrisburg, Pa., Secretary.
American Society for Clinical Investigation, Atlantic City, May 8. Dr. H. L. Blumgart, 330 Brookline Avenue, Boston, Secretary.
American Society for Experimental Pathology, Detroit, April 10-13. Dr. Shields Warren, 195 Pilgrim Road, Boston, Secretary.
American Society for Pharmacology and Experimental Therapeutics, Detroit, April 10-13. Dr. E. M. K. Geiling, 710 N. Washington Street, Baltimore, Secretary.
American Society of Biological Chemistry, Detroit, April 10-13. Dr. H. A. Mattill, State University of Iowa, Iowa City, Secretary.
Arizona State Medical Association, Phoenix, April 25-27. Dr. D. F. Harbridge, 15 East Monroe Street, Phoenix, Secretary.
Arkansas Medical Society, Fort Smith, April 15-17. Dr. W. R. Brooksher, 602 Garrison Avenue, Fort Smith, Secretary.
Association of American Physicians, Atlantic City, May 7-8. Dr. James H. Means, Massachusetts General Hospital, Boston, Secretary.
California Medical Association, Yosemite, May 13-16. Dr. F. C. Warnshuis, 450 Sutter Street, San Francisco, Secretary.
Connecticut State Medical Society, New Haven, May 22-23. Dr. C. W. Comfort Jr., 27 Elm Street, New Haven, Secretary.
District of Columbia, Medical Society of the, Washington, May 1. Dr. C. B. Conklin, 1718 M Street N.W., Washington, Secretary.
Federation of American Societies for Experimental Biology, Detroit, April 10-13. Dr. H. A. Mattill, State University of Iowa, Iowa City, Secretary.
Florida Medical Association, Ocala, May 13-15. Dr. Shaler Richardson, 111 West Adams Street, Jacksonville, Secretary.
Georgia, Medical Association of, Atlanta, May 7-10. Dr. Allen H. Bunce, 139 Forrest Avenue N.E., Atlanta, Secretary.
Illinois State Medical Society, Rockford, May 21-23. Dr. Harold M. Camp, Lahl Building, Monmouth, Secretary.
Iowa State Medical Society, Davenport, May 8-10. Dr. Robert L. Parker, 3510 Sixth Avenue, Des Moines, Secretary.
Kansas Medical Society, Salina, May 8-10. Mr. Clarence Munns, Stormont Building, Topeka, Executive Secretary.
Louisiana State Medical Society, New Orleans, April 29-May 1. Dr. P. T. Talbot, 1430 Tulane Avenue, New Orleans, Secretary.
Maryland, Medical and Chirurgical Faculty of, Baltimore, April 23-24. Dr. Walter Dent Wise, 1211 Cathedral Street, Baltimore, Secretary.
Mississippi State Medical Association, Biloxi, May 14-16. Dr. T. M. Dye, McWilliams Building, Clarksdale, Secretary.
Missouri State Medical Association, Excelsior Springs, May 6-9. Dr. E. J. Goodwin, 634 North Grand Boulevard, St. Louis, Secretary.
National Association of Private Psychiatric Hospitals, Washington, D. C., June 1. Dr. James M. O'Neill, St. Vincent's Retreat, Harrison, N. Y., Secretary.
Nebraska State Medical Association, Omaha, May 14-16. Dr. R. B. Adams, Center-McKinley Building, Lincoln, Secretary.
New Hampshire Medical Society, Manchester, May 7-8. Dr. Carleton R. Metcalf, 5 South State Street, Concord, Secretary.
New Jersey, Medical Society of, Atlantic City, April 30-May 2. Dr. J. B. Morrison, 66 Milford Avenue, Newark, Secretary.
New York, Medical Society of the State of, Albany, May 13-15. Dr. Daniel S. Dougherty, 2 East 103d Street, New York, Secretary.
North Carolina, Medical Society of the State of, Pinehurst, May 6-8. Dr. L. B. McBrayer, Southern Pines, Secretary.
North Dakota State Medical Association, Minot, May 27-28. Dr. Albert W. Skelsey, 20½ Broadway, Fargo, Secretary.
Oklahoma State Medical Association, Oklahoma City, May 13-15. Dr. L. S. Willour, 203 Ainsworth Building, McAlester, Secretary.
South Carolina Medical Association, Florence, April 23-25. Dr. E. A. Hines, Seneca, Secretary.
South Dakota State Medical Association, Pierre, May 13-15. Dr. John F. D. Cook, Langford, Secretary.
Tennessee State Medical Association, Nashville, April 9-11. Dr. H. H. Shoulders, 706 Church Street, Nashville, Secretary.
Texas, State Medical Association of, Dallas, May 13-16. Dr. Holman Taylor, 208 Medical Arts Building, Fort Worth, Secretary.
West Virginia State Medical Association, Wheeling, May 6-8. Mr. Joe W. Savage, Public Library Building, Charleston, Executive Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American J. Obstetrics and Gynecology, St. Louis

29: 1-154 (Jan.) 1935

*Hormones in Relation to Reproduction. C. R. Moore, Chicago.—p. 1.
Fetal Mortality in Different Types of Toxemia. A. J. B. Tillman and B. P. Watson, New York.—p. 19.
Analysis of One Hundred and Twenty-Seven Cases of Eclampsia Treated by Modified Stroganoff Method. C. H. Peckham, Baltimore.—p. 27.
Studies of Hepatic Function: IV. Hepatic Function During Pregnancy. A. Cantarow, H. Stuckert and E. Gartman, Philadelphia.—p. 36.
Labor in the Cardiac Patient: Report of Occurrence of Coronary Occlusion in Pregnancy and Labor. R. A. Reis and L. E. Frankenthal Jr., Chicago.—p. 44.
*Management of Pregnant Women with Heart Disease. J. E. Fitzgerald, Chicago.—p. 53.
Heart Disease Complicating Pregnancy: Clinical Study. W. Schuman, Baltimore.—p. 64.
Embryonal Carcinoma of Ovary (Disgerminoma). S. A. Wolfe and S. Kaminester, Brooklyn.—p. 71.
*Effect of Cigaret Smoking During Pregnancy on Fetal Heart Rate. L. W. Sontag and R. F. Wallace, Yellow Springs, Ohio.—p. 77.
Ovarian Follicular Hormone Effects on Ovaries. E. Allen and A. W. Diddle, New Haven, Conn.—p. 83.
Value of Irradiation in Treatment of Ovarian Carcinoma. J. H. Harris and F. L. Payne, Philadelphia.—p. 88.
Pharmacologic Study of Uterine Fistula of Unanesthetized Rabbit: I. Pituitrin. G. L. Weinstein and M. H. Friedman, Philadelphia.—p. 93.
*Comparative Study of Lipiodol Injection and Air Insufflation in Sterility. B. Rabbiner, Brooklyn.—p. 100.
Is the Lower Uterine Segment Exclusively a Clinical Phenomenon? H. Acosta-Sison, Manila, P. I.—p. 106.
Leiomyoma of Bladder. F. E. Keene and P. Tompkins, Philadelphia.—p. 109.
Use of Follutein in Dysmenorrhea. W. H. Browne, Chicago.—p. 113.
Sexual Excitability as Related to Menstrual Cycle in Monkey. Josephine Ball and C. G. Hartman, Baltimore.—p. 117.
Ovarian Response in Monkeys (Macacus Rhesus) to Injections of Antuitrin-S. C. E. Johnson, New Haven, Conn.—p. 120.
Simultaneous Bilateral Tubal Pregnancy. S. L. Siegler, Brooklyn.—p. 122.
Localized Traumatic Cyanosis in the New-Born. J. H. Telfair and J. A. Gaines, New York.—p. 125.
Septicemia in the New-Born. W. B. Mount, Montclair, N. J.—p. 126.
Endometriosis, Chronic Bartholinitis and Ovarian Cyst. C. E. Galloway, Evanston, Ill.—p. 128.
Device for Rupturing Membranes. D. A. Bickel, South Bend, Ind.—p. 130.

Hormones in Relation to Reproduction.—To explain the relation of the hormones to reproduction, Moore discusses (1) the double functional potentiality of the sex glands, (2) the control of the essential accessory reproductive organs, the nonessential characteristics and to some extent the psychic behavior by the homologous sex hormone and the absence of an effect from the heterologous sex hormone, (3) the threshold of effectiveness of hormones, (4) the lack of effect of gonad hormones on the gonads themselves, (5) the absence in the gonads of the power of self regulation, and (6) the principle that hypophyseal activity is modified by the gonad hormones (there is a reciprocal interaction between the gonads and the pituitary). The author believes that sufficient detail has been presented to indicate that many of the phenomena of reproduction are interpretable on the basis of the working hypothesis presented. This type of explanation has been of service in his laboratory in suggesting lines of experimental attack on several problems. He anticipates, however, that many other factors will be found to enter into the mechanisms of control of the phenomena discussed and admits that several facts are difficult to fit into the scheme suggested. He states that with an increase of present knowledge and the evaluation of factual information there is little doubt that understanding of the mechanisms of control will advance. It is probable that other endocrine glands will have to be placed in the chain of events as a necessary link; but, until the interpretations are clear, working hypotheses will have a place.

Pregnancy and Heart Disease.—Fitzgerald reports on the management of pregnancy in 126 cases in which there was no reasonable doubt as to the presence of organic heart disease. Of the 126 cases, 107 presented mitral disease and sixty-one of these showed evidence of stenosis. The patients were all examined at frequent intervals during their pregnancies. Whenever a patient was unable to do her ordinary activities without dyspnea or fatigue, whenever she had difficulty in lying down without more than one pillow under her head and whenever she developed a cough even with no other symptoms, she was immediately hospitalized. If at routine examination the pulse was more than 100 when at rest or if any irregularity developed, she was hospitalized even if symptoms were absent. To protect the patients from the development of such conditions they were required to spend two hours of each day at complete rest. Digitalis was never given during pregnancy while the patient was at home. In the hospital when the symptoms were of great importance the advice of the physician in charge of the heart clinic was requested. These patients were hospitalized for a few days before they went into labor when indicated. By this method of hospitalization at the first sign of significant evidence of myocardial stress the author was enabled to carry the entire group through pregnancy without alarming symptoms. Treatment during labor was simple. In labor, as well as during pregnancy, no distinction was made between the various types of heart lesion other than as a matter of record. The routine sedative used was one-fourth grain (0.016 Gm.) of morphine and $\frac{1}{150}$ grain (0.0004 Gm.) of scopolamine hypodermically. This was given in primigravidas as soon as the cervix was dilated 3 cm., and in multigravidas as soon as labor had definitely begun. The dose was repeated after four hours if it seemed advisable. In the second stage, if progress was rapid, the normal process was not interfered with. If at any time after the cervix was completely dilated progress was slowed or there developed any symptoms of cardiac distress, delivery was accomplished by forceps under ether. These patients when once in labor made satisfactory and frequently rapid progress. In the primigravidas the longest labor was twenty-nine hours, the shortest labor was six hours and the average was ten hours and fifty minutes. The multiparas had an average labor of five hours and forty minutes, the extremes being three hours and ten minutes and eight hours and fifty minutes. Under this management 126 patients have delivered 189 babies. Two patients aborted spontaneously before five months. Three nonviable premature babies, including one pair of twins, were born. Eleven patients went into labor prematurely, but after their babies had become viable. Two of these babies failed to survive. One full-term normally delivered infant developed pneumonia and died. No patient died during pregnancy or labor. One died six weeks post partum from an acute bacterial endocarditis, which developed after labor. One died nine months post partum at the age of 45. No patient was delivered by cesarean section, because of the heart condition.

Cigaret Smoking and the Fetal Heart Rate.—Sontag and Wallace made a study of the fetal heart rate, before and after maternal smoking, eighty-one times on five patients. The average fetal heart rate for five minutes before smoking was 144.0 ± 0.14. The average fetal heart rate for the eighth to the twelfth minute after a cigaret was lighted and smoking begun was 149.0 ± 0.13. The average increase in the rate was 5.0 ± 0.19 beats. Since the difference in rates before and after smoking is more than twenty-five times the probable error of the difference, the effect of smoking is actual. Of the five patients, four showed an increase in the fetal heart rate after smoking, while the fifth showed a decrease. The four showing increases were habitual smokers who inhaled the smoke. The patient showing a decrease had never smoked before, did not inhale, and expelled the smoke from her mouth as quickly as possible. There were occasional negative trials in each of the four patients showing an increase. These occurred for the most part at times when the fetal heart rate during the control period was above its average. The increase in the fetal heart

rate appears to be due to the passage of the toxic products of tobacco smoke into the fetal circulation, where they affect the fetal heart rate in the same way in which the adult heart rate is affected. Since the toxic effects of tobacco on young children and of nicotine contained in mother's milk on nurslings have been reported, a careful study of the new-born offspring of mothers who smoke heavily during pregnancy is indicated. Evidence of injurious effects of smoking during pregnancy may be overlooked.

Iodized Poppy-Seed Oil Injection and Air Insufflation in Sterility.—Rabbiner points out that a review of the literature indicates that routine injections of iodized poppy-seed oil are not harmless and that as a diagnostic method it carries a morbidity and mortality, even though small. The use of these injections in cases of sterility is unwise until a complete history, a careful bimanual examination, an endocrine survey, air insufflation tests, study of the vaginal chemistry, and investigation of cervical disorder and of the fertility of the male have been made. Operations on the tubes should be postponed for several months after the injections. In sterility cases in which one tube is occluded or both tubes show partial occlusion, as demonstrated by air insufflation, the injections of the oil should be used cautiously, since complete occlusion may result and thus defeat the primary objective. Air insufflation yields the desired information regarding the condition of the tubes, without harm and subsequent sequels. This has been the author's experience in a large number of cases. The contention that the oil may remain in the peritoneal cavity for a year or more and result in serious pathologic changes has been verified by personal experience and the publications of others. Misinterpretation is not unlikely in the reading of salpingograms by the inexperienced; errors are few after transuterine insufflation.

American Journal of Pathology, Boston

11: 1-184 (Jan.) 1935

Pathology of Parathyroid Gland in Hyperparathyroidism: Study of Twenty-Five Cases. B. Castleman and T. B. Mallory, Boston.—p. 1.
Enlargement of Parathyroid Glands in Renal Disease. A. M. Pappenheimer and S. L. Wilens, New York.—p. 73.
Atypical Amyloid Disease. D. Perla and H. Gross, New York.—p. 93.
*Subacute Lymphatic Leukemia: Histogenetic Study of Case with Three Biopsies. J. Stasney and H. Downey, Minneapolis.—p. 113.
*Hepato-Adrenal Necrosis with Intranuclear Inclusion Bodies: Report of Case. G. M. Hass, Boston.—p. 127.
*Myocardial Lesions in Subacute Bacterial Endocarditis. O. Saphir, Chicago.—p. 143.
Hepatic Infarction. H. Lund, H. L. Stewart and M. M. Lieber, Philadelphia.—p. 157.
Annular Pancreas: Report of Case, with Simple Method for Visualizing the Duct System. J. B. McNaught and A. J. Cox, San Francisco.—p. 179.

Subacute Lymphatic Leukemia.—Stasney and Downey observed a case of lymphatic leukemia in which the biopsy of a lymph node from the earlier stage of the leukemic involvement revealed a marked hyperplasia of the reticulum. At the same time, in the peripheral blood there were a number of large reticulo-endothelial cells in addition to immature lymphocytes. In many instances these reticulo-endothelial cells showed a nucleus with a rather dense chromatin structure resembling a nucleus of a lymphocyte. In a later stage at the second biopsy the medullary portion was packed with a dense mass of large immature lymphocytes, while the cortical region showed more or less well preserved germ centers. The subsequent disappearance of the large reticulo-endothelial cells from the peripheral blood was also noted. Therefore, the first involvement of the leukemic process seems to begin with a diffuse proliferation of the reticulum. It was noted that the chromatin structure became more condensed. Numerous transitional forms from reticulo-endothelial cells to large lymphocytes were found in the imprint preparations and in the peripheral blood from the earlier stages, which later disappeared. In a later stage the medullary portion was entirely replaced by a dense mass of large cells with basophilic cytoplasm. It was only in the cortical region that a few more or less well preserved follicles were retained. Simultaneously in the peripheral blood there was a marked increase of immature lymphocytes. This indicates that in the lymphoid tissue the mesenchymal syncytium is rather uniformly distributed and that lymphocytopoiesis is not restricted to the germinal centers or to preformed germ center cells. The evidence of extramedullary myelopoiesis in the medulla, as well as in germinal centers, the marked monocytic production in cases of leukemic reticulo-endotheliosis and finally the transformation of the mesenchymal syncytial cells into lymphocytes indicate the embryonic hematopoietic potency of the syncytial reticulum cells.

Hepato-Adrenal Necrosis with Intranuclear Inclusion Bodies.—Hass witnessed intranuclear inclusion bodies in the parenchymal cells of the liver and adrenals of a 2 weeks old premature infant (seven months) in whom the chief pathologic changes were a widespread necrosis of the liver and focal cortical necrosis of the adrenals. He assumes that the unique lesions must have been produced by a filtrable virus.

Myocardial Lesions in Subacute Bacterial Endocarditis.—Saphir examined the myocardium of thirty-five hearts of patients dying from subacute bacterial endocarditis. Sections from various portions of both ventricles were embedded in paraffin and stained with hematoxylin-eosin. The Gram-Weigert and the Van Gieson stains were also used. Frozen sections were often cut and stained with sudan III to demonstrate the presence of fat. In some instances serial sections were cut from a whole block and stained with hematoxylin-eosin. The prussian blue reaction was employed to determine the presence of iron-containing pigment. Grossly the myocardium almost invariably was softer than normal, its cut surface was of a boiled appearance and the architecture was obscured. Just beneath the endocardium many minute yellowish streaks were often observed, which occasionally were arranged in the form of tiger stripes. These were particularly evident in the papillary muscles of both ventricles. In some hearts the myocardium was traversed by grayish yellow and grayish red streaks and had a peculiar speckled appearance. Occasionally, circumscribed, minute yellow nodules, or larger, soft yellow areas were encountered which were surrounded by hemorrhagic zones. Only in one case could an embolus be demonstrated grossly in the coronary artery. The aortic valve in this heart was almost completely destroyed and all three cusps were practically replaced by large, soft, grayish red vegetations. Mycotic aneurysms were found in the sinus of Valsalva corresponding to the left and posterior aortic cusps. The distal portion of the circumflex branch of the coronary artery at the point of origin of the ramus marginis obtusi was occluded by an embolus which was reddish gray, soft and similar in every respect to the vegetations on the aortic valve. In six hearts petechial hemorrhages were encountered. More commonly the subendocardial layer was involved, but occasionally the myocardium in an area at a distance from the endocardium was affected.

American Journal of Psychiatry, New York

91: 725-968 (Jan.) 1935

Etiology of Manic-Depressive Syndromes, with Especial Reference to Their Occurrence in Twins. A. J. Rosanoff, Leva M. Handy and Isabel Rosanoff Plesset, Los Angeles.—p. 725.
Depression and Mental Disease in New York State. H. M. Pollock, Albany, N. Y.—p. 763.
Psychiatry and Problems of Delinquency. M. S. Gregory, New York.—p. 773.
Clinical Study of Inmates Sentenced to Sing Sing Prison for First Degree Murder. A. T. Baker, Briarcliff Manor, N. Y.—p. 783.
Ward Personnel in Mental Hospitals. G. H. Stevenson, London, Ont.—p. 791.
Influence of Size of Family on Characteristics of the Mentally Deficient: Survey of Twenty Thousand Four Hundred and Seventy-Three Retarded Children in Public Schools of Massachusetts. N. A. Dayton, Boston.—p. 799.
Objective Determination of Factors Underlying Mental Health. W. Line and J. D. M. Griffin, Toronto.—p. 833.
Chronic Postencephalitis in Juvenile Delinquents. M. Molitch, Jamesburg, N. J.—p. 843.
Study of Discipline in Penal and Correctional Institution. C. R. F. Beall, Atlanta, Ga.—p. 863.
Treatment of Problem Children in Psychiatric Hospital. H. W. Potter, New York.—p. 869.
Significance of Blood Groups in Inoculation Malaria. I. M. Derby, Brooklyn.—p. 881.
Sexual Sterilization: Four Years' Experience in Alberta. C. A. Baragar, Edmonton, Alta.; G. A. Davidson, Ponoka, Alta.; W. J. McAlister, Edmonton, Alta., and D. L. McCullough, Red Deer, Alta.—p. 897.
Association-Motor Investigation of Psychoneuroses. C. H. Barnacle, F. G. Ebaugh and F. Lemere, Denver.—p. 925.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

33: 1-148 (Jan.) 1935

*Visualization of Suprasellar Tumors by Encephalography: Report of Nine Cases. W. B. Hamby, Buffalo, and W. J. Gardner, Cleveland. —p. 1.

Roentgen Studies on Fate of Calcium in Bones of Retained Dead Rabbit Fetuses: Evaluation of "Decalcification" as Roentgenographic Diagnostic Criterion of Death of Fetus in Utero. J. W. Lawlah and P. C. Hodges, Chicago.—p. 10.

Roentgenographic Study of Gastro-Intestinal Motility in Rachitic Rats. R. S. Harris and J. W. M. Bunker, Cambridge, Mass.—p. 25.

*Benign Stricture of Stomach and Esophagus. J. Sagel, Minneapolis. —p. 31.

Congenital Diaphragmatic Hernia: Case Report. J. Friedman, Montreal. —p. 36.

Fracture of Anterior Superior Spine of Ilium in One Case, and Anterior Inferior in Another Case. I. Weitzner, New York.—p. 39.

Technic and Results of Irradiation in Carcinoma of Breast: Review of Eleven Hundred and Twenty-Nine Private Cases. G. E. Pfahler and J. H. Vastine, Philadelphia.—p. 41.

*Dosage and Technic in Treatment of Carcinoma of Uterine Fundus with Radium. H. H. Bowing and R. E. Fricke, Rochester, Minn. —p. 50.

Pigmented Moles and Their Treatment. H. F. Anderson and C. A. Simpson, Washington, D. C.—p. 54.

Relative Value of Surgery, Radium and Roentgen Therapy in Carcinoma of Breast. I. Levin, New York.—p. 59.

Roentgen Treatment of Carbuncles. W. B. Firor, Baltimore.—p. 71.

*Preliminary Study of Effect of Artificial Fever on Hopeless Tumor Cases. S. L. Warren, Rochester, N. Y.—p. 75.

Dangers of Roentgenoscopy and Methods of Protection Against Them: III. Protective Power of Barium-Filled Stomach. E. I. L. Cilley, E. T. Leddy and B. R. Kirklin, Rochester, Minn.—p. 88.

Visualization of Suprasellar Tumors by Encephalography.—Hamby and Gardner discuss the encephalographic characteristics in nine cases of tumors of the suprasellar region: four craniopharyngiomas, two suprasellar meningiomas, two gliomas of the optic chiasm and one arachnoid cyst. The characteristic observations in these tumors are obliteration of the cisterna chiasmatis, diminution of the frontal cerebral subarachnoid spaces and more or less encroachment on the ventricular system. The different types of tumor appear to present some differential features. The craniopharyngiomas showed, in addition to the general features, an anterior-inferior filling defect in the third ventricle and more or less obstruction of the foramina of Monro with resulting hydrocephalus. The meningiomas showed, in addition to the general features, outlining of the superior border of the tumor with less compression of the third ventricle. Filling defects were noted in the floors of the anterior horns of the lateral ventricles. The gliomas of the optic chiasm await further observations for the establishment of a clear conception of their characteristics. The increased size of the infundibulochiasmal shadow in a normal cisterna chiasmatis, in a patient having a syndrome indicative of chiasmal damage, seems suggestive of a chiasmal glioma. The outline of a normal chiasmal cistern on the encephalogram excludes the possibility of a surgical lesion in this region.

Benign Stricture of Stomach and Esophagus.—Sagel cites two cases that show strictures of both the stomach and the esophagus due to ingestion of alkalis. While benign stricture of the stomach and esophagus is a relatively rare condition, it should be thought of when esophageal and gastric lesions do not show changes characteristic of other diseases. A concomitant lesion in the esophagus and the stomach is suggestive of benign stricture. A history of the swallowing of corrosive material is, of course, of prime importance in establishing the diagnosis. The author enumerates observations which he believes will aid in the diagnosis and differentiation of this condition from other esophageal and gastric lesions.

Treatment of Carcinoma of Uterine Fundus with Radium.—The basic principle of the present technic of Bowing and Fricke for the treatment of carcinoma of the uterine fundus consists of intensive application by the broken dose method and the use of simple applicators, which are gamma-ray tubes containing 50 millicuries of radon, as the unit of treatment; this permits wide choice so that treatment can be individualized. As the lesion cannot be accurately outlined, their purpose is adequate homogeneous irradiation of the uterine canal, including the cervix when involved, supported by vaginal irradiation. Radium element needles are employed in cases of metastasis to the vaginal wall, and surface packs are used if the inguinal lymph nodes are involved. Treatments with x-rays are given following the course of radium treatments, especially in inoperable cases and in those in which the lesions are of a high grade of malignancy. The whole problem is mainly surgical, although when operation is contraindicated many lesions may be satisfactorily arrested or apparently "cured" by careful irradiation. In inoperable conditions, palliation is usually secured by limited treatments.

Study of Effect of Artificial Fever in Hopeless Tumor Cases.—Warren states that there is in vitro (and some in vivo) experimental evidence suggesting a definite "thermal death time" for transplantable animal tumors at high febrile temperatures. There is a distribution of heat by the circulating blood in the febrile state so that the internal organs and tumors in animals, and presumably in man, reach and can be maintained at any predetermined temperature level. This is usually nearly equal to the rectal temperature. On this basis, thirty-two hopeless advanced human cases of different types of malignant disease were treated by generalized fever therapy and a combination of fever therapy at 41.5 C. (106.7 F.) and high voltage roentgen therapy. In cases treated previously by high voltage roentgen therapy and in untreated cases, fever therapy seems to have a definite destructive effect on the tumor cells. The amount of destruction and its duration varies from case to case. Further work on this aspect of the treatment of malignant disease seems to be warranted in the hope of obtaining an additional aid in the treatment of this malady. No results approaching cure have yet been obtained by this procedure. In all cases but three, after the fever treatment there was immediate improvement in the general condition, lasting various periods of time (from one to six months), with gain in weight and strength and with shrinkage of tumor masses of various amounts and duration. Evidence of return of growth of the tumor process in all patients occurred at various intervals and rates. It was the clinical opinion of those concerned that because of the rapid growth of the tumors and the condition of the patient the probable length of life was restricted (from one to three months).

American Journal of Syphilis and Neurology, St. Louis

19: 1-160 (Jan.) 1935

Clinical Syphilitic Nephropathies: Study of New Cases and Survey of Reported Cases. G. Herrmann and W. L. Marr, Galveston, Texas. —p. 1.

Transmission of Syphilis by Blood Transfusion. H. W. Jones, T. K. Rathmell and C. Wagner, Philadelphia.—p. 30.

*Leukocytes in Early Acute Experimental Syphilis in Rabbits. L. Lowenstein, Nashville, Tenn.—p. 39.

Citochol Reaction for Diagnosis of Syphilis: Comparison with Kahn and Wassermann Reactions. K. Deissler, Rochester, Minn., and A. B. Baker, Minneapolis.—p. 48.

Unilateral Amyotrophy: Its Diagnostic Importance for Cerebral Localization. N. W. Winkelman and A. Silverstein, Philadelphia. —p. 58.

*Comparative Estimation of Cerebrospinal Fluid from Cisternal and Lumbar Punctures in Syphilitic Patients. K. A. Moskvin, L. M. Markuss and V. N. Vassilieva, Kharkov, Ukraine, U. S. S. R.—p. 77.

Juvenile Paretic Neurosyphilis Studies: VI. Physical Complications, Stigmas and Endocrinopathies. W. C. Menninger, Topeka, Kan. —p. 88.

Leukocytes in Syphilis in Rabbits.—Lowenstein noticed an increase in the number of phagocytic mononuclear cells in early acute experimental syphilis in the rabbit. Qualitatively these cells showed evidence of increased physiologic and phagocytic activity. There was also a decrease in the number of lymphocytes. The degree of increase in the large phagocytic mononuclear cells paralleled the degree of activity at the site of the testicular lesions. No significant changes were observed in the total number of leukocytes or in the other leukocytic elements of the blood, while gross testicular lesions were present.

Comparison of Cerebrospinal Fluid from Cisternal and Lumbar Punctures in Syphilis.—From the comparative study of cisternal and lumbar fluids in syphilis, Moskvin and his associates conclude that: 1. While one is performing the Wassermann test it is necessary to use 1 cc. of the fluid as the initial maximal quantity, carrying out the test quantitatively with the amounts 1, 0.5 and 0.1 cc. 2. The employment of various methods of extract dilution helps to carry out a

more exact estimation of the Wassermann test variations in the cisternal and spinal portions. The Wassermann reaction does not differ greatly in either portion, but the variance is usually observed within the limits of two-plus. The positiveness of the colloidal and protein tests and lymphocytosis is more marked in the lumbar portion. The difference is the least pronounced in the benzoin test. 3. In the cerebral forms of syphilis the cisternal fluid does not differ significantly from that of the lumbar region. 4. In the cerebrospinal fluid diagnosis of syphilis the principal part is the examination of the lumbar fluid. Yet the examination of cisternal fluid is an extremely valuable adjunct to it; it is necessary (1) for the study of pathologic dynamics of the spinal fluid when frequent examinations of the lumbar fluid are impossible, owing to meningism, (2) in cases in which the lumbar puncture is contraindicated and (3) in cases in which the spinal fluid cannot be obtained by lumbar puncture.

Annals of Surgery, Philadelphia

101: 659-818 (Feb.) 1935

*Problem of Draining Abdominal Cavity in Cases of General Peritonitis. M. G. Breitman, Moscow, U. S. S. R.—p. 662.
Surgical Management of Chronic Subdural Hematoma. C. H. Frazier, Philadelphia.—p. 671.
Spinal Analgesia: Report of Fifteen Hundred Cases. O. C. King, Philadelphia.—p. 690.
Use and Abuse of Spinal Anesthesia. J. P. North, Philadelphia.—p. 702.
Jejunostomy with Jejunal Alimentation. J. A. Wolfer, Chicago.—p. 708.
Leiomyoma of Small Intestine. E. J. Klopp and B. L. Crawford, Philadelphia.—p. 726.
*Submucous Lipomas of Intestinal Tract, as Cause of Intestinal Obstruction. J. D. Kirshbaum, Chicago.—p. 734.
Acute Tuberculous Appendicitis. E. M. Drissen and R. Zollinger, Boston.—p. 740.
Cystine Nephrolithiasis: Report of Two Cases. L. Herman and W. E. Lee, Philadelphia.—p. 746.
*Treatment of Recurrent Incisional Hernia by Flaps of Anterior Sheath of Rectus. N. S. Rothschild, Philadelphia.—p. 754.
Fibrosarcoma of Extremities. E. M. Bick, New York.—p. 759.
Arteriography in Gangrene of Extremities by Use of Thorium Dioxide (Stabilized): Study Based on Twenty-Seven Cases. J. R. Veal and Elizabeth M. McFetridge, New Orleans.—p. 766.
Compressed Fractures of Vertebrae. D. P. Willard, Philadelphia.—p. 776.

Draining the Abdominal Cavity in Peritonitis.—Breitman believes that the removal of exudate may be achieved in a sufficient measure, avoiding the dangers and complications connected with drainage, in the following manner: After the usual manipulations within the abdominal cavity in cases of acute peritonitis, the gastrocolic omentum, if it has not been destroyed by some inflammatory process, is spread over the intestinal loops, the drainage tube is wrapped in gauze and laid on the omentum, and the abdominal wall is sutured by layers with the exception of the lower end of the wound, which serves as an outlet for the drainage tube. A sufficiently thick bandage is applied, so that it will absorb the exudate discharged through the drainage tube. On the next day the wet top layers of the bandage are changed. Applied in this manner the drainage tube is not located amid the intestinal loops, being isolated from the latter by the omentum. Consequently it is hoped that there will be neither adhesions of the intestinal loops nor injury to the intestinal walls due to the action of the tube. The author is of the opinion that under this arrangement a sufficient discharge of exudate is possible because the bandage quickly becomes wet during the first hours after the operation, so that it becomes necessary to reinforce it. On the next day the upper layers of the bandage, which are changed, are saturated with exudate. The author employed the foregoing procedure in six cases of general peritonitis of different origin: one of peritonitis caused by perforation of a duodenal ulcer, two of appendicitis with peritonitis, two of peritonitis caused by volvulus of the cecum, and one of peritonitis caused by volvulus of the sigmoid flexure. The drainage tubes were removed on the fifth to the seventh day. Five of the patients recovered and one died on the sixth day, with symptoms of postoperative pneumonia. The author does not consider the method a panacea for the treatment of peritonitis, but the method is the working hypothesis of a practical surgeon, which deserves a certain amount of attention and should be verified on a larger amount of material.

Submucous Lipomas of Intestinal Tract.—In 5,754 consecutive necropsies performed at the Cook County Hospital, Kirshbaum states that nine cases of lipoma of the gastro-intestinal tract were found. While in seven cases the lipoma was merely an incidental observation and measured from 1 to 3 cm. in diameter, in two of the cases the tumor proved to be of grave significance. In one of these two cases the lipoma became sequestrated, mobilized and lodged in the lower ileum, occluding the lumen. The second tumor induced an intussusception of the lower 8 inches of the ileum into the cecum. Both cases resulted in death, and necropsy disclosed a diffuse peritonitis. Lipomas were the second most frequent type of benign tumors of the gastro-intestinal tract encountered in the 5,754 necropsies. Of the nine cases reported, eight were of the submucous type and one was subserous. The diagnosis of submucous lipoma of the intestinal tract is almost never made during life.

Treatment of Recurrent Incisional Hernia.—Rothschild submits a procedure for recurrent incisional hernial flaps of the anterior sheath of the rectus. The first step consists of an adequate exposure of the sac of the hernia and the anterior sheaths of the right and left rectus muscles. The sac should be opened in all cases in which the contents cannot be reduced, which permits the severance of adhesions of the omentum to the sac and the exploring of the upper part of the abdomen. The sac is then excised and its edges are sutured. When the contents of the sac are reducible, the sac may be reduced in size by the inversion method of Haynes. The second step consists in the clearing of the anterior sheath of the rectus of all adipose tissue. The longitudinal and transverse diameters of the hernial orifice are measured. Markings are made on the anterior sheaths of the rectus muscles to designate the length of the flaps desired. Markings are also made to designate the width of each flap, so that when the flaps are sutured together they will cover the hernial orifice without undue tension. The flaps are raised and hinged along their medial border. They are then sutured by a continuous stitch. The upper and lower edges are sutured by interrupted stitches to the remaining portion of the anterior sheath of the rectus. Redundant skin is removed, stab wounds are made at the lowest level, and drains are inserted at these points. The wound is then closed. When the hernia is the result of an upper right rectus incision the flap of the left rectus sheath will necessarily be larger than the flap obtained from the right side, while in hernia occurring in the midline the flaps will be of the same size. Adequate drainage should be established because of the extensive dissection of the skin and subcutaneous fat. Abdominal distention should be avoided. To lessen the distention or to avoid it in the upper portion of the abdominal cavity, the author uses the Jutte tube immediately after the operation. It remains in place four or five days whether distention is present or not. These patients are kept flat on their backs, with but one pillow to elevate their heads, for a period of four weeks.

Archives of Otolaryngology, Chicago

21: 1-130 (Jan.) 1935

Cancer of Larynx: Observations in Two Hundred Consecutive Cases. G. Tucker, Philadelphia.—p. 1.
Hay Fever Among Japanese: II. H. J. Hara, Los Angeles.—p. 9.
Aural Manifestations of Lipoid Granulomatosis (Xanthomatosis) of the Skull. F. L. Lederer, H. G. Poncher and N. D. Fabricant, Chicago.—p. 27.
So-Called Mucoid Cysts of Nose: Report of Three Cases. A. F. Laszlo, New York.—p. 41.
*Structure of Secondary Nodule of Tonsil: Preliminary Report. F. J. Novak Jr., Chicago.—p. 53.
Conservative Surgical Treatment of Hypertrophic Rhinitis. H. V. Dutrow, Dayton, Ohio.—p. 59.
Revelations of Detailed Diet Histories Obtained in Practice of Ophthalmology and Otolaryngology: Comparison with Accepted Dietary Standards. R. M. Moose, San Bernardino, Calif.—p. 64.
Reinfection of Wound Following Mastoidectomy. A. A. Schwartz, New York.—p. 71.
Progress in Otolaryngology: Functional Examination of Hearing. R. Sonnenschein and N. Leshin, Chicago.—p. 76.

Structure of Secondary Nodule of Tonsil.—Novak found that, whereas the reticular fibers branch, anastomose and ramify with no regularity of pattern throughout the tonsil with the exception of those areas in the immediate vicinity of the secondary nodule, here they assume a pattern that is constant and regular. The fibers are fairly thick and are arranged more

or less parallel to one another in two or three rows. In sections stained with hematoxylin and eosin it is readily seen that the small, dark-staining lymphocytes which are packed in sharply parallel rows at the periphery of the nodule correspond in their arrangement to the concentric and parallel arrangement of the supporting fibers in this part. This arrangement does not obtain round the entire periphery in some of the nodules. Some of them show a dispersion of the fibers at one pole. It is at this point that one frequently observes minute blood vessels in cross-section just outside the nodule. In one section a small vessel cut tangentially was seen to be entering the interior of the nodule. These vessels are difficult to demonstrate except by silver impregnation. The arrangement of the reticular framework within the nodule differs from that of the rest of the tonsil in that the fibers do not seem to interlace as much as they do elsewhere. Moreover, the fibers are thin and even in serial sections are difficult to trace for any distance. The arrangement is far looser, and there are wide spaces that in counterstained preparations are seen to be packed with various cells. The cellular content of the nodule as shown by differential staining consists of lymphocytes of various size and maturity. There are many reticular cells, the nuclei of which alone stand out definitely, as the cytoplasm has no limiting cell boundary but forms part of a true syncytium. Mast cells and an occasional plasma cell are found.

Archives of Pathology, Chicago

19: 1-138 (Jan.) 1935

Plastic Studies in Abnormal Renal Architecture: III. Aglomerular Nephrons of Terminal Hemorrhagic Bright's Disease. J. Oliver and Ann Seaward Luey, Brooklyn.—p. 1.
Experimental Color Change in Fish. W. Saphir, Chicago.—p. 24.
*Compensatory Hypertrophy of Remaining Kidney After Nephrectomy Following Transplantation of Its Ureter into Duodenum. J. L. Bollman and F. C. Mann, Rochester, Minn.—p. 28.
Ligation of Common Bile Duct in Cat. H. L. Stewart and M. M. Lieber, Philadelphia.—p. 34.
Focal Calcification of the Brain and Dura of Hydrocephalic Idiot Child. G. Rukstinat, Chicago.—p. 47.
Experimental Siderosis: I. V. Menkin, Boston.—p. 53.
*Id.: II. Iron-Containing Pigment in Absence of Breakdown of Hemoglobin. V. Menkin and S. M. Talmadge, Boston.—p. 61.
Effects of Artificially Induced Lymphopenia in Cancer-Resistant and Cancer-Susceptible Rats. M. F. Guyer, F. E. Mohs and E. M. Shebesta, Madison, Wis.—p. 66.
Tumor Metastasis: VI. Ovarian Metastasis of Carcinoma. S. Warren and W. B. Macomber, Boston.—p. 75.
Scarlet Red as Possible Carcinogenic Agent: Experimental Study. C. T. Eckert, Zola K. Cooper and M. G. Seelig, St. Louis.—p. 83.

Hypertrophy of Remaining Kidney After Nephrectomy.—The experiments of Bollman and Mann indicated that hypertrophy of the remaining kidney after nephrectomy is greatly increased by accumulation of urinary products in the blood following transplantation of the ureter so that the urine drains into the duodenum. The kidney increased in weight from 60 to 100 per cent within nine days. The glomerular tufts are enlarged, but most of the increase appears to be due to swelling and multiplication of the cells of the tubules in which there is some evidence of early degeneration. Creatinine apparently does not accumulate in the blood under these conditions until degeneration of the kidney appears.

Experimental Siderosis.—Menkin and Talmadge state that, whereas repeated intravenous injections of a 0.25 per cent solution of ferric chloride in distilled water are followed by extensive siderosis, there is no appreciable change in the number of red blood cells, the percentage of hemoglobin or the reticulocyte count. Since this solution of ferric chloride is hypotonic, its injection into the circulation induces a certain amount of hemolysis. However, the laking action evidently plays an insignificant part in the formation of iron-containing pigment, for, when a nonhemolytic, isotonic solution of ferric chloride is substituted for the hypotonic one, the same type of deposition of cystosiderin occurs. Furthermore, when a hypotonic saline solution is repeatedly injected intravenously, iron-containing pigment fails to be deposited. These experiments furnish evidence that iron-containing pigment (indistinguishable from hemosiderin) need not be derived solely through the action of phagocytes on the products of the degradation of hemoglobin but may arise also as a result of the intracellular digestion of available iron-containing material, exogenous as well as endogenous.

Colorado Medicine, Denver

32: 89-176 (Feb.) 1935

Study of Sixty-Five Cases of Cancer of Breast Recurrent After Operation. S. Withers, Denver.—p. 100.
Aneurysm of Thoracic Aorta: Clinical Study of Two Hundred and Seventy Cases. R. H. Kampmeier, New Orleans.—p. 104.

Delaware State Medical Journal, Wilmington

7: 297-316 (Jan.) 1935

Intracranial Injuries of the New-Born: From the Standpoint of the General Practitioner. P. B. Bland, Philadelphia.—p. 297.
Infant Nutrition, with Reference to Lemon Juice Feeding. J. B. Baker, Milford.—p. 303.

Endocrinology, Los Angeles

19: 1-128 (Jan.-Feb.) 1935

Contemplating the Hormones. O. Riddle, Cold Spring Harbor, N. Y. —p. 1.
Compounds That Affect Basal Metabolism in Man. W. O. Thompson, Phoebe K. Thompson, S. G. Taylor 3d, Chicago; S. B. Nadler, New Orleans, and Lois F. N. Dickie, Chicago.—p. 14.
*Two Cases of Childhood Myxedema, Reported for Purpose of Emphasizing Importance of Bone Age Studies. C. K. Canelo, San Jose, Calif., and H. Lisser, San Francisco.—p. 21.
*Nature of Estrogenic Substance in Human Male Urine and Bull Testicle. R. I. Dorfman, T. F. Gallagher and F. C. Koch, Chicago. —p. 33.
Comparative Luteinizing Capacity of Urine of Pregnancy and of Menopause. A. Lipschütz, Concepción, Chile, South America.—p. 42.
Castration Atrophy: Chronological Study of Uterine Changes Following Bilateral Ovariectomy in Albino Rat. W. C. Langston and B. L. Robinson, Little Rock, Ark.—p. 51.
Action of Anterior Pituitary-like Substance of Urine on Metabolism of Dogs. O. H. Gaebler, Detroit.—p. 63.
Clinical Observations on Effects of Anterior Pituitary-like Substance (Antuitrin-S) on Testicle. W. L. Brosius, Detroit.—p. 69.
Prolonged Administration of Theelin and Theelol to Male and Female Rats and Its Bearing on Reproduction. N. J. Wade and E. A. Doisy, St. Louis.—p. 77.
Relationship of Hypophysis to Hair Growth in Albino Rat. J. S. Snow and R. W. Whitehead, Denver.—p. 88.
*Attempts to Reduce Symptoms of Experimental Diabetes by Irradiation of Hypophysis. W. A. Selle, J. J. Westra and J. B. Johnson, Galveston, Texas.—p. 97.

Childhood Myxedema Emphasizing Bone Age Studies.—Canelo and Lisser report two cases of childhood myxedema: one a girl of 12, the other a woman of 34. The girl showed an ossification age of from 6 months to 1 year. In the woman the epiphyses were still ununited and her bone age was estimated at 10 years. The diagnosis of childhood myxedema was clinically obvious in both patients, but roentgenographic studies of bone age were an important item in gaging the severity of thyroid deficiency. A basal metabolism test could not possibly have been performed in the stupid child of 12. Bone age studies were easily obtained, with accuracy and without discomfort. Other ailments, endocrine and nonendocrine, influencing ossification are referred to. Periodic bone age determinations constitute a simple and helpful adjuvant in judging the efficacy of thyroid therapy in childhood myxedema.

Nature of Estrogenic Substance in Male Urine and Bull Testicle.—Dorfman and his associates compared the uterine hypertrophy and vaginal introitus responses of equivalent rat unit dosages of theelin, theelol and estrogenic substance from male urine, made at estrogenic levels ranging from 0.01 to 0.3 rat unit. Their method involved the daily administration of the active material in olive oil to female albino rats 25 days of age for five days, and observing the uterus and vagina on the sixth day. Litter mates were used throughout the comparative studies and 161 animals were used for the comparative studies. The quantitative data lead to the following conclusions: 1. There is a distinct difference between theelin and theelol in their respective abilities to cause hypertrophy of the uterus and cause vaginal introitus. On an estrus-rat unit basis, theelol is more effective in causing vaginal introitus as originally demonstrated by Curtis and Doisy, whereas theelin produces an enormously greater uterine hypertrophy. 2. The estrogenic substance in the total benzene extract from normal male urine resembles neither theelin nor theelol in causing either vaginal introitus or uterine hypertrophy. 3. The estrogenic substance in the alkali-soluble fraction of the total benzene extract is biologically identical with theelin. It is not comparable to theelol in causing either vaginal introitus or uterine hypertrophy. 4. The evidence presented points to

the presence of a substance in the alkali-insoluble fraction of the total extract which, when administered with theelin, enhances the action on both the vagina and the uterus. This substance is neither theelin nor theelol.

Attempts to Reduce Symptoms of Diabetes by Irradiation of Hypophysis.—The experiments of Selle and his co-workers show that of seven diabetic (depancreatized) dogs the fasting blood sugar was not reduced in five after irradiation of the hypophyses by high dosage. In three animals the blood sugar was considerably higher after irradiation. The response to ingested dextrose was always typical of severe diabetes. There was no increased sensitivity to insulin and the insulin dosage necessary to prevent glycosuria on a well controlled diet could not be reduced. No indication, then, was found that massive irradiation of the hypophysis with x-rays under the conditions stated reduces the severity of the symptoms of experimental diabetes.

Indiana State Medical Assn. Journal, Indianapolis

28: 57-112 (Feb. 1) 1935

*Erythroblastic Anemia. R. A. Strong, New Orleans.—p. 57.
Diagnosis and Treatment of Thyroid States. F. H. Lahey, Boston. —p. 60.
The New-Born Infant: Its Hazards and Care. F. J. Hudson, Indianapolis.—p. 65.
Influence of Medicine on Life Expectancy. H. L. Murdock, Fort Wayne.—p. 68.
Etiology and Treatment of Iritis. B. W. Egan, Logansport.—p. 69.
Familial Hemolytic Jaundice: Splenectomy in Mother and Daughter. F. A. Loop, Lafayette.—p. 77.
Intraspinal (Subarachnoid) Injection of Absolute Alcohol for Control of Pain in Far Advanced Malignant Growths: Case Report. M. M. Gitlin, Bluffton.—p. 80.

Erythroblastic Anemia.—Strong points out that in erythroblastic anemia several features seem to stand out in every case reported since Cooley's first description. The children usually resemble the Mongolian race. There is a peculiar yellow, muddy discoloration of the skin, with a thickening of the cranial bones and the malar eminences. This thickening is more pronounced as the disease progresses. The changes in the bones are promptly recognized as being peculiar to this form of anemia when roentgenograms are made. The skull shows a marked thickening and a peculiar halo resembling the growth of hair. A peculiar mottled or "mosaic" appearance of the bones of the hands and pelvis is observed. There is a decreased density, amounting almost to transparency, of the fibula and tibia. The explanation that has been offered for these changes in the bones is that they are the result of the reaction of the marrow to prolonged overstimulation as a consequence of a chronic hemolysis beginning before the cortex is too firm to permit the overgrowth of marrow. In the earlier stages and in less severe cases, the porous appearance in the roentgenograms seems to represent marrow hyperplasia, while in the terminal stages the pronounced striation indicates replacement of exhausted marrow, but new bone has been found at necropsies. The bone change is not primary. Most of the cases seen have been either in Italians or in children of parents from the Mediterranean countries. Evidence of bone marrow stimulation, characterized by the great number of immature forms, a constant leukocytosis and the absence of increased fragility, seem to be the principal features of the blood picture. The hemoglobin in every case has usually been round 30 to 40. The red cells are reduced considerably. There is usually a leukocytosis of 20,000 or more, but the differential count is not especially remarkable. The cells vary greatly in size and shape, and there are usually a considerable poikilocytosis and anisocytosis. There is a marked and early bone marrow irritation, which is reflected in the production of the increased number of leukocytes. As the development of the marked bone hyperplasia increases, these numbers may run to a high figure. In erythroblastic anemia, fragility of the erythrocytes to hypotonic salt solutions is conspicuous by its absence. It is for this reason that this particular form of anemia is not considered to be a true hemolytic jaundice, which invariably shows an increase in fragility of erythrocytes to salt solutions. In no other disease of the blood is there a greater number of erythroblasts than is seen in erythroblastic anemia. Moreover, after a splenectomy their number increases remarkably, but so far as available results are concerned there seems to be little definite improvement in the patient. Hemolysis and jaundice may be temporarily lessened, but the disease process continues. The benefit to the patient lies mostly in the removal of the drag of the heavy spleen.

Journal of Nutrition, Philadelphia

9: 1-118 (Jan. 10) 1935

Effect of Diet on Blood Thioneine of Albino Rat. V. R. Potter and K. W. Franke, Brookings, S. D.—p. 1.
Liver Glycogen from Derivatives of Glucose. W. T. Salter, P. D. Robb and F. H. Scharles, Boston.—p. 11.
Effect of Phosphates on Bones of Rachitic Rats. C. A. Lilly, C. B. Peirce and R. L. Grant, Ann Arbor, Mich.—p. 25.
Cataract in Rats Fed on High Lactose Rations. Helen S. Mitchell and W. M. Dodge, Battle Creek, Mich.—p. 37.
Effect of Fertilizers and Soil Types on Mineral Composition of Vegetables. J. M. Coleman and R. W. Ruprecht, Gainesville, Fla.—p. 51.
Stability of Vitamins B (B_1), G (B_2) and B_4. J. A. Keenan, O. L. Kline, C. A. Elvehjem and E. B. Hart, Madison, Wis.—p. 63.
Study of Iron Metabolism of Normal Women. Margaret A. Ohlson and Kate Daum, Iowa City.—p. 75.
Study of Protein Needs of Preschool Children. Amy L. Daniels, Mary K. Hutton, Elizabeth M. Knott, Olive E. Wright, Gladys J. Everson and Florence Scoular, Iowa City.—p. 91.
Study of Basal Metabolism and Diet of Normal Young College Women in Florida. Jennie Tilt and Catherine F. Walters, Tallahassee, Fla. —p. 109.

Laryngoscope, St. Louis

45: 1-80 (Jan.) 1935

The Eighth Nerve: I. Basic Principles Underlying Tests of Hearing. V. O. Knudsen and I. H. Jones, Los Angeles.—p. 1.
Id.: II. Diagnosis of Hearing Impairments. I. H. Jones and V. O. Knudsen, Los Angeles.—p. 24.
Id.: III. Artificial Aids to Hearing. V. O. Knudsen and I. H. Jones, Los Angeles.—p. 48.
*Id.: IV. Neuro-Otologic Studies in Epilepsy. E. E. Langdon, Los Angeles.—p. 70.

Neurotologic Studies in Epilepsy.—Langdon states that it is evident that a large proportion of active idiopathic epileptic patients show some departure from the responses obtaining in normal persons. There is no one response, however, that is constantly lacking in all the cases. One cannot help being impressed with the large number that show absent or subnormal constitutional responses, in that after this more or less violent ear stimulation they are not disturbed, showing no pallor, sweat or nausea whatever. Quite similar responses are encountered in cerebrospinal syphilis and arteriosclerosis of the cerebral vessels. Both these conditions give subnormal responses, but the absence of the constitutional responses is not so marked as in epilepsy. Modern investigators no longer consider epilepsy a clinical entity but are inclined to speak of it as a symptom complex or syndrome. The pathogenesis of this disease has been the subject of a great deal of speculation and has not escaped even the most extravagant fancies. The cause has been ascribed to pathologic conditions ranging all the way from congenital cerebral anomalies to gastro-intestinal autointoxication. The phenomena accompanying the aura have long interested the otolaryngologist. It is generally accepted that the vestibular pathways go through the brain stem and are intimately associated with the basal ganglions, and that a failure to get a normal response in the epileptic patient would seem to indicate at least that some of the pathologic changes are located in the region of the basal ganglions. The author offers this only as a suggestive link in the chain of evidence tending to show that epilepsy is not entirely a cortical disease, as once thought, but that at least a phase of the seizure does arise from the lower centers.

Public Health Reports, Washington, D. C.

50: 95-130 (Jan. 25) 1935

Sickness Among Male Industrial Employees During Third Quarter and First Nine Months of 1934. D. K. Brundage.—p. 95.
Place of Psychiatry in Coordinated Correctional Program. F. L. Bixby. —p. 98.

50: 131-162 (Feb. 1) 1935

Effects of Exposure to Dust in Two Georgia Talc Mills and Mines. W. C. Dreessen and J. M. D. Valle.—p. 131.

Rhode Island Medical Journal, Providence

18: 17-34 (Feb.) 1935

Prevention of Malpractice Suits: Address by Retiring President of the Providence Medical Association. C. F. Gormly, Providence.—p. 17.
Importance of Observation and Induction in Diagnosis: Some Remarks on Errors in Diagnosis. G. Blumer, New Haven, Conn.—p. 20.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Anæsthesia, Manchester

12: 49-96 (Jan.) 1935

Technic of Nerve Blocking for Various Orthopedic Operations. J. S. Lundy and R. M. Tovell.—p. 52.
Vinyl Ether Anesthesia in Dogs: Effects on Normal and Impaired Liver. W. Bourne and B. B. Raginsky.—p. 62.
Spinal Anesthesia: Criticism. E. F. Hill.—p. 70.
General Intravenous Anesthesia with Evipan Sodium. P. Serocca.—p. 78.
Two Hundred and Fifty Cases of Spinal Anesthesia with Percaine According to Method of Jones. H. Franken.—p. 81.

British Medical Journal, London

1: 139-188 (Jan. 26) 1935

Achresthic Anemia. J. F. Wilkinson and M. C. G. Israels.—p. 139.
*Problem of Chronic Duodenal Ulcer Without Stenosis. E. L. Farquharson.—p. 144.
Endoscopic Resection of Prostate: Critical Survey of One Hundred and Fifty Cases. R. W. Doyle and G. Y. Feggetter.—p. 147.
Immobilization in Treatment of Suppuration. M. Dixon.—p. 152.
Recovery After Complete Stoppage of Heart for Five Minutes. G. P. Mills.—p. 153.

1: 189-238 (Feb. 2) 1935

Abdominal Surgery in Children. P. T. Crymble.—p. 189.
Classic Case of Lead Palsy. W. Harris.—p. 193.
Achresthic Anemia: Part II. J. F. Wilkinson and M. C. G. Israels.—p. 194.
Some Experiences with Spinal Anesthesia. E. R. Flint.—p. 197.
Diphtheria in the Tropics: Subclinic Disease in Negroes. G. Kinneard.—p. 201.

Chronic Duodenal Ulcer Without Stenosis.—Farquharson points out that the early acute ulcer and the "chronic" ulcer of short standing are essentially the province of the physician and, with energetic medical treatment, can be cured in the vast majority of cases. At the other end of the scale the late complication of cicatricial stenosis renders medical treatment unavailing. Gastro-enterostomy has shown undisputedly excellent results in this condition. However, the vast majority of cases of duodenal ulcer do not permit of such simple division. It is comparatively rare for either the medical or the surgical specialist to see an ulcer patient in the early stages of the condition. Unless acute emergencies, such as severe hemorrhage or perforation, suddenly establish the diagnosis, the condition is usually overlooked or treated in the early stages as simple dyspepsia. Energetic medical treatment is seldom employed before the diagnosis is established definitely. The modern necessity of roentgenologic and biochemical facilities, as aids to diagnosis, means that the ulcer patient rarely receives adequate medical treatment until he is referred to the hospital or to the specialist. Statistics regarding the duration of symptoms prior to hospitalization indicate that at least 70 per cent of patients have symptoms for four or more years before the diagnosis is established and adequate medical treatment commenced.

Clinical Journal, London

64: 45-88 (Feb.) 1935

*Ascites: Its Diagnostic Significance and Treatment. R. Hutchison.—p. 45.
Nature and Relief of Some Common Gastric Symptoms. J. A. Ryle.—p. 48.
Sterility in Women. A. C. Palmer.—p. 52.
Deformities of Toes. C. Lambrinudi.—p. 57.
Diagnosis and Treatment of Sciatica. J. B. Burt.—p. 62.
Diagnosis of Renal and Vesical Disease in General Practice. H. Wade.—p. 66.
Some Factors in Causation of Rheumatism. B. S. Nissé.—p. 71.
Paragonimus Hemoptysis: Case. R. A. Bennett.—p. 76.

Diagnostic Significance and Treatment of Ascites.—Hutchison gives the probable causes of ascites as being a part of a general dropsy (cardiac or renal), the result of portal obstruction, obstruction of the inferior vena cava high up, inflammatory effusion, abdominal tuberculosis (chiefly in children), chronic (nontuberculous) peritonitis and peritoneal irritation, though it is difficult to draw a sharp line between irritation and inflammation. As ascites is a sign and not a disease, it is not worth while trying to get rid of it unless it is causing great inconvenience. Drugs are not of much help. Purgatives have to be used cautiously. Ordinary diuretics are useless, but salyrgan, given intravenously or muscularly (from 0.5 to 1 cc.), is sometimes of great value, especially if used with ammonium chloride (120 grains, or 8 Gm., daily). Apart from meeting any indications furnished by the underlying disease, it is reasonable to restrict fluids as much as the patient can bear and to make the diet as free from salt as possible. In abdominal tuberculosis, evacuation by laparotomy is best. In women, incision is sometimes to be preferred. In most cases of ascites, if the fluid should be evacuated, tapping is the method of choice. It is best to make the puncture in the flank and to use a trocar with a tube of moderate caliber. The fluid should be evacuated in any case in which its presence is causing serious inconvenience. Operations designed to promote absorption of the fluid by establishing an anastomosis between the portal and the general circulation have practically been given up. They were founded on the assumption that ascites is due to portal obstruction, which is not true for most cases.

East African Medical Journal, Nairobi

11: 305-336 (Jan.) 1935

Drainage as Controlling Factor in Spread of Hookworm. W. H. Watson.—p. 308.
Some Observations on Infants and Young Persons in Bunyoro, Uganda. E. A. C. Langton.—p. 316.
Ocular Filariasis. A. J. Boase.—p. 326.

Indian Medical Gazette, Calcutta

69: 661-720 (Dec.) 1934

General Paralysis of Insane in Burma. G. H. Fraser.—p. 661.
Part Played by Feeling of Guilt in Etiology of Mental Disorders. O. Berkeley-Hill.—p. 665.
Observations on Thickness of Frontal and Parietal Bones. A. N. Sen.—p. 667.
Hookworm Infection in Punjab: Survey of Rural Area in Ambala District. M. Yacob and J. R. Chaudhri.—p. 669.
Study of Trachoma in Baluchistan. P. Shannon.—p. 672.
Sodium Evipan Anesthesia: Study of Thirty Cases. E. S. Chellappa.—p. 685.
*Treatment of Enlarged Spleens with Injections of Milk. A. P. Jana.—p. 687.

Treatment of Enlarged Spleens with Injections of Milk.—Jana treated 319 cases of enlarged spleen by injecting milk free from fat. Eighty of the patients have been discharged as cured and 146 received only one injection and did not return. The outcome in 173 cases was noted to some extent; of these 173 cases ninety-eight presented soft spleens, fifty-four hard spleens and in twenty-one cases the consistency of the organ had not been noted. Of the eighty cured cases there were fifty-six soft spleens, eighteen hard spleens and in six cases the consistency of the spleen had not been noted. Of the hard spleens one was of a duration of ten years and was cured with three injections, one of six years was cured with fourteen injections, one was cured with five injections, two were of a duration of four years and were cured with four injections. The duration of the others was less than one year. Among the improved cases there must be many cured, as on inquiry three cases were found to be cured after the first injection. These were cases of recent origin with small sized spleens. As a result of his experience the author concludes that enlargement of the spleen is reduced by intramuscular injection of milk free from fat. Milk injection is effective in enlargement of the spleen due to malaria. In enlargement of the spleen due to kala-azar it has little effect if any. In one case four injections were given regularly, but no effect was observed and the patient was subsequently treated and cured with dimethyamine *p*-aminophenyl stibinate. Soft spleens are easily reduced in size with this treatment. The progress of improvement is slow in hard spleens. After the completion of one course of five injections a second or third course is sometimes required, a gap of one month being given between courses. The longer the duration of the enlarged spleen, the more the number of injections and the longer the time required for its cure.

Irish Journal of Medical Science, Dublin

No. 109: 1-48 (Jan.) 1935

Mercer's Hospital: Its Foundation and Early Days. T. P. C. Kirkpatrick.—p. 1.
Extracts from Old Minute Books. R. H. Keatinge.—p. 16.
Personal Reminiscences of Mercer's Hospital. J. Lumsden.—p. 19.
The Future of Mercer's Hospital. R. J. Rowlette.—p. 22.
Results of Treatment in Syphilis. M. H. O'Connor.—p. 24.
Recent Researches on Suprarenal Gland. E. Brauer.—p. 39.

Journal of Laryngology and Otology, London

50: 73-152 (Feb.) 1935

*Diagnosis and Treatment of Abscess of the Brain. H. Cairns and C. Donald.—p. 73.
Id. S. Scott.—p. 106.

Diagnosis and Treatment of Abscess of the Brain.—In their discussion on abscess of the brain, Cairns and Donald describe methods of operation and then analyze their material, especially the failures. They discuss the thick-walled chronic abscess, the acute and early chronic abscess, drainage by the closed method and open method, after-treatment of the acute and chronic abscess, postoperative complications and errors in diagnosis and treatment, presenting illustrative cases in each instance. They believe that the many difficulties of diagnosis will be overcome by careful history taking and neurologic examination in the light of an accurate knowledge of the life history of brain abscess. If every patient who has severe headache after ear trouble or mastoid operation should be put through the mill of such an investigation, the bad results of today would be improved. They especially stress the importance of examining the visual fields. It is that part of the examination more than any other which cannot be done when the patient becomes lethargic and, for want of which, localization of the abscess in the stupefied patient may be so baffling. When intracranial complications are suspected, neurologic investigation should take precedence over mastoidectomy, since it will tell more about what is happening inside the dura than can be learned from looking at a small area of dura exposed in the region of the mastoid. Lumbar puncture should be done, but only 1 cc. of fluid should be withdrawn. Diagnostic exploration as they describe it is, they believe, important in certain cases. With each case of abscess there is need to form some estimate of when the abscess began and what stage it has reached, for this is the only way in which to gage the right moment for intervention. This can be done only by careful study of the history of illness.

Journal of State Medicine, London

43: 63-124 (Feb.) 1935

Back-to-Back Houses. H. Paul.—p. 63.
Twenty-One Years' Experience in Insurance Medical Service in the City of Norwich. J. W. Copeland.—p. 72.
Open Air Schools: Critical Survey. G. W. Riddel.—p. 88.
Present Day Health Problems in Rural Area. J. F. Davidson.—p. 92.
The Chemist in the Food Industry. J. W. Corran.—p. 102.
Parentcraft. D. H. Geffen.—p. 109.
The Problem of the Disposition of the Dead in Crowded Areas. P. H. Jones.—p. 112.
Toxicity of Calcium Cyanamide. F. Schoofs.—p. 116.

Lancet, London

1: 69-128 (Jan. 12) 1935

Mental Disorder in General Practice: Plea for Clinical Psychiatry. D. Curran and E. Slater.—p. 69.
*Diagnosis of Vitamin C Subnutrition by Urine Analysis: Note on Antiscorbutic Value of Human Milk. L. J. Harris and S. N. Ray.—p. 71.
Mixed Tumors of the Brain: Record of Two Cases. H. E. Harding and A. E. Naish.—p. 77.
*Monocytic Leukemia. L. E. H. Whitby and J. M. Christie.—p. 80.
Vinyl Ether. F. E. Shipway.—p. 82.

Diagnosis of Vitamin C Subnutrition by Urinalysis.—Harris and Ray observed that infants suffering from manifest scurvy or with a history of vitamin C underfeeding excrete less vitamin C in their urine (measured chemically) than do well nourished infants of the same age tested under the same conditions (on controlled diets low in vitamin C). The difference can be made more strikingly manifest by the administration of a large test dose of vitamin C: a marked peak results in the curve of the urinary excretion for the normal infants, but not for the "unsaturated," scorbutic or semiscorbutic infants. After cure the scorbutic infant behaves like a normal infant both in his output of vitamin C on ordinary diets (or controlled diets free from vitamin C) and in his response after the test dose. Observations on adults show that a low urinary output and a low response to test doses go parallel with a history of vitamin C underfeeding and with a state of vitamin C subnutrition as indicated by a lowered capillary resistance. The authors describe a technic that is being used to estimate the prevalence of hypovitaminosis C among certain sections of the community. The rarity of scurvy in breast-fed infants is explained by the finding that human milk contains from three to four times the amount of vitamin C found in cow's milk; part of the latter is also lost generally (1) by pasteurization, (2) during standing, (3) by further heating and (4) by dilution.

Monocytic Leukemia.—Whitby and Christie present a case of monocytic leukemia the clinical features of which show that it is not necessarily rapidly fatal, even when accompanied by acute symptoms such as fever, severe anemia and necrotic mouth lesions. There were two remissions—a feature unusual in other acute leukemias. The anemia in the first two attacks was much more severe than would have appeared probable when estimating the acuteness of the leukemic process by the number of primitive cells. The authors were impressed by the distribution of the necrotic lesions in the mouth, which appeared to select the alimentary mucosa rather than the respiratory part of the pharynx. Ulceration failed to spread on to the tonsil or into the nose. Terminal hepatic enlargement was coincident with the appearance of a frankly leukemic blood picture. This enlargement was not apparently due to heart failure and was unaccompanied by enlargement of the spleen and lymph nodes. Save for the terminal phases there was a definite granulopenia, and pentnucleotide was administered for this during the first attack. Violent reaction to the preparation prohibited its further use. The case, as judged by histologic sections, appeared to present a partial myeloid termination. The blood during the last few days of life contained a number of myeloblasts. The predominant cell throughout was an unmistakable monocyte. Histologic sections showed no evidence of proliferation of the reticulum cells of the spleen or of desquamation of newly formed histiocytes into the blood.

Japanese Journal of Obstetrics and Gynecology, Kyoto

17: 387-478 (Dec.) 1934

*Experimental Study on Effects of Vitamin B on Female Genital Organs: Part IV. Effects of Some Endocrines to Ovarian Hypofunction Due to Deficiency of Vitamin B: Part V. Effects of Deficiency Disease of Vitamin B on the Conceptive Ability, Pregnancy, Parturition and Puerperium. J. Ueno.—p. 388.
Hysterosalpingography in the New-Borns. H. Yagi and A. Yamabe.—p. 412.
Investigation of Ferments in Uterine Cancer. K. Nakahori.—p. 419.
Blood Vessels of Uterine Tumors. G. Kawanishi.—p. 446.
Experimental Cancer Growth and Ovarian Function. H. Kondo.—p. 452.
Clinical Observation of Beriberi Complicated During Pregnancy and Puerperium. Y. Fujita.—p. 461.

Effect of Vitamin B on Female Genital Organs.—Ueno observed that in the deficiency disease of vitamin B the conceptive ability is depressed and some animals finally fall into sterility. But before the deficiency of the vitamin becomes intense, conception is possible, though various abnormal processes take place during the course of pregnancy, parturition and puerperium; for instance, anomalous hemorrhage of the pregnant uterus, intra-uterine absorption of fetuses, early interruption of pregnancy, weakened power of expulsion, and disturbance in the uterine involution. During the attack of the disease, the development of the fetuses is markedly hindered. In extreme cases some fetuses have been absorbed or macerated in the uterus and others have been delivered in stillbirth. Even if born alive, they are generally structurally weak and small in body length, and among the fetuses born from the same mothers some variance was revealed in their body weight and length.

Journal of Oriental Medicine, South Manchuria

21: 95-118 (Dec.) 1934. Partial Index

Research on Pyogram of Amebic and Bacillary Dysentery. Y. Tsugé.—p. 95.
Etiology of Mitral Stenosis in Manchuria. D. S. Robertson.—p. 99.
Insensible Perspiration Through Skin and Respiratory Passages, and Compensatory Changes in Cutaneous Perspiration Due to Breathing Dry or Wet Air. J. Adachi and S. Ito.—p. 103.
Human Sweating Due to Muscular Exercise. H. Iwatake.—p. 105.
Studies on Ramon's Flocculation: I. Influence on Flocculation of Physiochemical Factors. T. Komiyama.—p. 107.
Id.: II. Is Ramon's Flocculation a Specific Reaction Between Toxin and Antitoxin? T. Komiyama.—p. 107.
Id.: III. Practicability of Ramon's Flocculation Reaction. T. Komiyama.—p. 108.
Id.: IV. Speed of Flocculation. T. Komiyama.—p. 109.
Lipofuscin-like Substance in Vascular Walls of Human Brain. S. Masayama.—p. 111.
Biochemical Investigation of Blood Serum Irradiated by Artificial Light: II. Dosimetry of Ultraviolet Radiation. M. Murayama.—p. 117.

Archives des Maladies de l'App. Digestif, Paris

25: 1-112 (Jan.) 1935

Acute Simple Gastric Paralysis. J. Monges.—p. 5.
Morphologic Constitution of Ulcerous Patients. J. Caroli and L. Corman. —p. 26.
*Allergic Factor in Colitis. H. G. Mogena.—p. 57.
Chronic Constipation. D. Wajskopf.—p. 73.

Allergic Factor in Colitis.—Mogena discusses food allergy and bacterial allergy in colitis. He examined personally fifty patients having mucous or catarrhal colitis in whom bacterial sensitization was found. The colon bacillus was found in 84 per cent, enterococci in 42 per cent, Bargen's organism in 40 per cent and fecalis, paracolon bacilli, staphylococci and other organisms less frequently. Eleven patients with severe ulcerous colitis were also studied. In eight of these, Bargen's diplostreptococcus was the only organism found. Sensitivity of the patients was tested for each of the germs found with cultures killed by heat and injected intradermally. The reaction was read after one-half hour, twenty-four and forty-eight hours. It was considered positive only when positive after one-half hour, and negative after twenty-four hours. In some cases a focal and general reaction was observed as well as a local one. Control tests were also performed on some normal persons. Sensitivity was recorded for colon bacilli in 48 per cent, for enterococci in 24 per cent, for paracolon bacilli in 16, and for others less frequently. In no case was there sensitivity to one organism alone. Desensitization by means of vaccine containing the indicated organisms was usually successful except in serious ulcerative colitis. Here the number of true positive reactions was less. In no case did the author observe exacerbation of symptoms from vaccine therapy. The results in this type of colitis were better than those obtained with any other form of therapy.

Presse Médicale, Paris

43: 177-200 (Feb. 2) 1935

*Hydatid Echo Sign. C. Lian and J. Odinet.—p. 177.
Anatomic, Physiologic and Clinical Approach in Surgery. G. Métivet. —p. 178.
Clinical and Therapeutic Reflections on Rôle of Hyperglycemia in Furunculosis. A. Raiga, J. Martineau and H. Chabanier.—p. 179.
*Primary Necrotic Angina. A. Stroé and D. Hortopan.—p. 182.

Hydatid Echo Sign.—Lian and Odinet cite three cases in which the sound elicited by percussion and auscultation over a hydatid cyst enabled a diagnosis to be made in the absence of a hydatid murmur. This so-called echo sign is thus frequently useful.

Primary Necrotic Angina.—Stroé and Hortopan have previously reported on the frequent complication of scarlet fever in Bucarest with necrotic angina (Henoch's angina). They conclude from this further study that the necrotic angina of Henoch constitutes a definite disease, which appears most commonly as a complication of scarlet fever. More rarely it may complicate diphtheria or may appear as an autonomous and primary disorder. It is an infection and can be contagious and give rise to small epidemics. Anaerobic organisms, Bacillus perfringens and more rarely other organisms seem to play a preponderant if not exclusive part in its causation. The injection of polyvalent antigangrenous serum constitutes the only efficacious treatment that they have found and should be given in all cases.

Schweizerische medizinische Wochenschrift, Basel

65: 129-148 (Feb. 9) 1935. Partial Index

Blood Perfusion of Hypertrophic Musculature. Frey.—p. 134.
*Treatment of Cystic Formations. K. Lenggenhager.—p. 134.
Studies on Physiopathology of Pneumonia. P. H. Rossier and P. Mercier.—p. 136.
Pellagra and Pellagroid. R. Flinker.—p. 137.

Treatment of Cystic Formations.—Lenggenhager points out that, if a cyst is emptied by puncture, it generally refills again, irrespective of its type, whether it is lined with epithelium or endothelium or whether it is a cavity that has developed by the disintegration of tissues. Newly developed pseudocysts are about the only exceptions to this rule, since they may disappear following a single puncture (for instance: hematomas that are at the point of transformation into seromas). The cause of the prompt refilling of cysts lies in the great secretory power of the cystic endothelium or pseudo-endothelium and in the type of secretion. To be sure, the secretion contains protein but not all the factors necessary for spontaneous coagulation. Since the agglutinations in the peritoneal cavity are caused by fibrinous exudation, the author reasoned that it ought to be possible to stimulate the cystic wall to fibrinous exudation. He obtained this result by the injection of saturated sterile solution of sodium chloride. Such an injection is followed by the secretion of a fluid with a high protein content. The treatment is done in the following manner: The cyst is emptied by puncture, and, if necessary (in case of new pseudocysts and of hydroceles), a 0.1 per cent solution of nupercaine sufficient to fill one fourth or one third of the volume of the cyst is introduced for from one to two minutes. The anesthetic is removed and the cyst is filled with sterile saturated solution of sodium chloride. Depending on the thickness of the cystic wall, this solution remains in the cyst for from two to three minutes. Then the fluid is removed, the cyst is irrigated with physiologic solution of sodium chloride or with distilled water and a compressing bandage is applied. The latter is removed after forty-eight hours and, if at this time an exudate is still present, it is left alone for ten or fourteen days. If it still persists after that period, a second injection is made. However, in the majority of cases this is not necessary. The author employed this treatment in ten cases of chronic bursitis (elbow, knee), in two traumatic hematomas, in one serous cyst of the auricle of the ear, in twelve ganglions, in two hydroceles and in two struma cysts. The treatment proved most effective in bursitis and in traumatic pseudocysts. In the ganglions the results were not so favorable. Isolated results were obtained in cases of hydroceles and of struma cysts, but the author does not recommend the treatment for struma cysts in general.

Prensa Médica Argentina, Buenos Aires

22: 159-208 (Jan. 23) 1935. Partial Index

Infrequent Arteriovenous Aneurysms. R. Pini and E. A. Pierini. —p. 159.
Abscesses of Lung in Children. E. A. Beretervide.—p. 164.
Influence of Infecting Surroundings in Infantile Tuberculosis. A. Marcasoli.—p. 196.
*Injections of Maternal Blood in Grave Vomiting of Infants. E. Sujoy. —p. 198.

Injections of Maternal Blood in Grave Vomiting of Infants.—Sujoy reports satisfactory results from intramuscular injections of blood from the mother in the treatment of grave vomiting of infants. The injections are given in the gluteal region twice a week in a dose of 20 cc. of blood each. In the cases of the author the vomiting was controlled at the first injection in four cases, at the third injection in one case, at the fifth injection in four cases and at the sixth injection in one case. No accident occurred. Only in one case was the blood taken from the father. None of the patients of the author had pyloric hypertrophy. The treatment seemed to be indicated even in cases of pyloric hypertrophy, having in mind the frequency of doubtful cases, the satisfactory results obtained by the medical treatment alone, as reported in the literature, and the seriousness of the surgical intervention in that condition. The pathogenesis of grave vomiting of infants is explained by the author as caused by a vagosympathetic disequilibrium with a vagal predominance of toxic origin that greatly improves or even disappears by the complicated and eutrophic action of the maternal blood on the organism of the infant.

Beiträge zur klinischen Chirurgie, Berlin

161: 1-176 (Jan. 23) 1935. Partial Index

Origin of Pain in Gallbladder Inflammation. C. Ritter.—p. 1.
*Treatment of Appendiceal Peritonitis in Intermediate and Late Stage. K. Reschke.—p. 64.
Determination of Blood-Alcohol and Accidents. G. Jungmichel.—p. 71.
*Problem of Myeloma. E. Mathias.—p. 79.
Hernias of Duodenojejunal Flexure. G. Küntscher.—p. 88.
*Localized Inflammation of Cecum and Its Treatment. H. Pich.—p. 107.

Treatment of Appendiceal Peritonitis.—Reschke calls attention to the increasing mortality of acute appendicitis. The type of case designated by Richardson as arriving at the hospital too late for an early operation and too early for a late

operation is responsible for the increase. The author does not accept the rule not to operate after the lapse of forty-eight hours, since the inflammatory process may still be limited to the appendix. On the other hand there may exist a tender but well encapsulated infiltrate, which may go on to absorption or to abscess formation. The third possibility is that of circumscribed or spreading peritonitis. The author is of the opinion that not only the encapsulated abscess but the spreading peritonitis as well should be treated on a conservative plan and no longer submitted to an operative intervention. To prove the point he compares his results with those of Martens, his predecessor at the Greifswald clinic. The latter operated in the acute cases in all stages, making an exception for the encapsulated abscess only. Martens' total mortality in acute appendicitis was 7.9 per cent, while Reschke's was 3.5 per cent. The comparison of their cases in which early operation was performed shows, however, slight difference in mortality: 1.2 per cent in Martens' series and 1.1 per cent in the author's. The difference in the total mortality cannot therefore be ascribed to a difference in the operative technic. In the author's opinion it is due to the difference in the method of treatment of the late cases. Martens treated them radically, whereas the author proceeded conservatively, operating only when an abscess had formed, and even then limiting himself to an incision from above or below. Of fifty-two late cases complicated by peritonitis, in which operation was performed by Martens, twenty-seven, or 52 per cent, of the patients died. In a series of similar cases treated conservatively by the author, three patients out of eighteen died, a mortality of 16 per cent. The author concludes that, when the opportunity for the early operation has been missed, better results will be achieved by waiting rather than intervening.

Problem of Myeloma.—Mathias states that the appearance of Bence-Jones albumose in the urine of patients with myeloma, though highly characteristic, is not essential. It is found with the greatest frequency in cases with wide bony dissemination of the tumor. Classification of the tumor on a histogenetic basis does not appear to have much value in the case of myeloma. The designation erythroblastoma, lymphoblastoma or plasmocytoma, because of the preponderance respectively of immature erythrocytes, lymphocytes or plasma cells, throws no light on the essential nature of the tumor. The differentiating histologic feature of myeloma is that it is made up of all the immature elements of the bone marrow. The occurrence in myeloma of double refractory crystals, either as needles or as rhombic prisms, was described by Abrikosov. Because similar crystals could be obtained from the Bence-Jones albumose, Abrikosov believed that myeloma was the expression of a variable structural reaction to a disturbed intermediary metabolism rather than a primary disease of the bone marrow. Local manifestations of myeloma are those of absorption of the bone with a tendency to fractures. Involvement of a vertebral body not infrequently causes compression of the cord. The most striking general manifestation is the progressive anemia and, next to it, the appearance of Bence-Jones albumose in the urine. The generally accepted idea that myeloma is a systemic disease has been recently challenged by the description of cases presenting a purely localized tumor. The author reports a case of his own and cites others reported by Geschickter, Crile and Broodgood. In the author's case a tumor, which on histologic examination proved to be a typical myeloma of the plasmacytoma variety, was removed from the scalp of a man, aged 65. Careful examination failed to reveal the presence of metastases in the skeleton. Reexamination eighteen months later likewise failed to show the presence of tumors. There was no anemia and no Bence-Jones albumose in the urine. The author concludes that, besides the generalized form of myeloma with its hopeless prognosis, there is a purely localized form amenable to surgical treatment.

Localized Inflammation of Cecum and Its Treatment.—Pich reports four cases of localized inflammatory process of the cecal wall in its early stages. The preoperative diagnosis in all was acute appendicitis. In three of these the appendix was entirely normal. The history of one suggested that the condition was chronic and that the operation was undertaken during an acute flare up. The author states that, while acute appendicitis has entirely replaced the older concept of perityphlitis as an independent entity, the contributions of the last decade demonstrate beyond any doubt that the latter, though rare, does exist as such. The inflammatory process involves most frequently the cecum and the adjacent portion of the ileum. Besides the specific causes, such as syphilis and tuberculosis, the etiologic factors considered are constipation and alterations in the physical and chemical character of the gastro-intestinal juices. The resulting lesions of the intestinal mucosa become the weak spot and favor localization of pathogenic microorganisms. Chronic inflammatory tumor of the large intestine requires extirpation. With regard to the acute inflammatory processes of the intestinal wall there exist no sharply defined indications for the operative treatment. Extensive inflammatory involvement of the cecal wall displays a striking capacity for spontaneous healing. The author therefore considers ileocecal resection a too formidable and hardly justified procedure for such cases. In three of the author's cases a complete recovery followed conservative treatment. In the fourth a part of the cecal wall had to be resected.

Deutsche Zeitschrift für Chirurgie, Berlin

244: 101-236 (Dec. 22) 1934. Partial Index

*Insulin-Dextrose-Water Tolerance as Liver Function Test in Rectal Carcinoma. F. J. Irsigler.—p. 101.
Advances in Study of Actinomycosis. E. Neuber.—p. 122.
*Vocation and Trauma in Dupuytren's Contraction. C. H. Schröder.—p. 140.
Experimental Studies of Development of Ileus in Acute Diffuse Peritonitis. H. Imanaga.—p. 156.
*Review of Two Decades of Experience with Appendicitis. E. Seifert.—p. 176.

Insulin-Dextrose-Water Tolerance as Liver Function Test in Rectal Carcinoma.—According to Irsigler, the liver function most important from the standpoint of the surgeon is that of glycogen storage and of the carbohydrate metabolism in general. A reliable liver function test would be helpful in cases of rectal carcinoma as an indicator of patients' resistance to the infection and to cancer toxemia, as well as of the existence of liver metastases. The author states that Rehn and Eitel have demonstrated the existence of a lowered sugar tolerance in cancer patients. The author administered levulose to eleven patients but was forced to give it up because of the occurrence of diarrheas and of contradictory results in a large proportion of the cases. Because sugar tolerance tests are in a sense tests of the insular function of the pancreas, he adopted the insulin-dextrose-water test. The technic followed was that of Morowitz and Mancke, who used it in internal medicine for the diagnosis of liver cirrhosis. A sample of blood was obtained on a fasting stomach at 6:30 a. m. Ten minutes later 20 units of insulin was administered. At 7 a. m., 50 Gm. of dextrose in 500 cc. of tea was given by mouth. This was followed by 1,000 cc. of tea or water. Samples of blood were taken at 7, 7:30, 8, 9 and 10 a. m. Sugar determinations were made after the method of Hagedorn-Jensen. In normal persons the administration of dextrose is followed by a rapid rise in the blood sugar, reaching 140 mg. per hundred cubic centimeters after half an hour. This is followed by a fall, which reaches its lowest point of about 80 mg. per hundred cubic centimeters at the end of three hours. In normal persons the difference between the fasting blood sugar and the lowest level after the administration of dextrose oscillates between 20 and 30. In diseases of the liver the blood sugar falls to about 40 mg. per hundred cubic centimeters and the difference between the fasting blood sugar and the lowest point of the alimentary glycemia was from 50 to 70. The author applied the test in eighteen cases of rectal carcinoma. In some of the cases the test had to be interrupted because of hypoglycemic manifestations caused by insulin. These manifestations in themselves as well as the marked sinking of the glycemic curve serve as an indicator of glycogen insufficiency and therefore of liver insufficiency. He likewise noted a rise of temperature during the rise of the glycemic curve and a corresponding lowering with the fall in the curve. In his opinion, this hypothermia is due either to deprivation of carbohydrate reserve of the tissues or to insulin effect on the heat center.

The tendency to hypoglycemic manifestations was greater in patients having liver metastases than in those without. The author feels that the test, while not free from errors, is useful in rectal surgery for the diagnosis of metastases as well as for planning two-stage or multiple stage operative interventions.

Vocation and Trauma in Dupuytren's Contraction.—Schröder states that Dupuytren's contraction always develops on the basis of a congenital dysplasia of the palmar aponeurosis inadequate to sustain the demands made on it. He was able to demonstrate the hereditary nature of this condition in about 40 per cent of the carefully investigated cases. Certain irregularities noted in the hereditary transmission point to the influence of exogenous factors. The author examined 2,198 persons whose occupation entails a varying degree of considerable trauma to the hands, with the object of ascertaining the influence of trauma on predisposition. The incidence of contracture was many times greater in persons whose hands were exposed to severe traumatization when compared with those whose hands were exposed to little or no trauma. Thus he regards Dupuytren's contracture as a result of two factors, the congenital predisposition and the external factor of repeated traumatization of the palm of the hand. With pronounced hereditary predisposition the contracture may develop in the presence of insignificant exogenous influences. In such cases heredity is relatively frequently demonstrable. A mild hereditary taint can result in a contracture only under the influence of severe traumatization. Dupuytren's contracture, resulting from a single trauma, is seen only exceptionally.

Experience with Appendicitis.—Seifert reports a statistical study of 2,763 cases of acute appendicitis in which operation was performed between 1911 and 1931 at the university clinic of Würzburg. Comparison of the two decades shows an increase in the incidence of the disorder in recent years. The age incidence, however, remained unchanged. The incidence of complications rises steadily within the first five days when surgical intervention is not instituted. Spreading peritonitis and abscess formation make up more than nine tenths of these complications. Pulmonary infections, venous thrombosis and embolism were responsible for only 1.5 per cent of the total mortality. On the basis of results, the author feels justified in adhering to the formerly established operative indication; namely, to operate as soon as the diagnosis of acute appendicitis is confirmed. The twenty-four or forty-eight hour limitation is not acceptable as an operative indication. The total mortality of the decade from 1911 to 1920 was 6.8 per cent. This figure was lowered to 3.5 per cent during the next decade from 1922 to 1931. An improvement was likewise observed in the mortality due to spreading peritonitis without tendency to localization. This mortality amounted to 69 per cent during the first decade and to 41 per cent during the second. These results have become worse in the last few years, in the author's opinion, principally because of the treatment of the walled-off abscess. The attitude of the Würzburg clinic regarding that complication is to wait if the fever is moderate, the pain not severe and the intestinal function satisfactory. Conservative treatment is particularly indicated in the older patients when, under the influence of rest in bed and warm applications, the temperature continues to fall and the tumor to shrink in size. When, on the other hand, fever and pain persist in the course of two or three days of conservative treatment, operation should no longer be delayed. The author believes that mortality from operations performed on abscesses is due to improper protection of the general peritoneal cavity. In twenty-five fatal cases of operation for a walled-off abscess, it was found that in twelve the process was one of a beginning diffuse peritonitis. In five cases of well walled-off abscess, death, in the author's opinion, was the result of the removal of the appendix. He shares Rehn's opinion that the treatment of the walled-off abscess should be limited to evacuation of pus, with no attempt at removing the appendix. He regards the operation for walled-off abscess as one requiring much surgical experience and believes that better results will be obtained when the operation is performed by experienced surgeons rather than by young clinical assistants.

Klinische Wochenschrift, Berlin

14: 145-184 (Feb. 2) 1935. Partial Index

Fate of Vitamin C in Digestive Tract: Action of Intestinal Bacteria on Vitamin C. W. Stepp and H. Schröder.—p. 147.
*Studies on Hyperchromic Anemias in Experimentally Produced Spruelike Disturbances. E. Rominger and C. Bomskov.—p. 148.
Clinical Aspects of Oral Scilla Therapy. W. Ludwig and F. Schneider.—p. 150.
*Specific and Nonspecific Reactions in Typhus, Cancer and Tuberculosis. L. Hirszfeld, W. Halber and Z. Szwojnicka.—p. 154.
Studies on Zondek-Aschheim Reaction. K. Hansen and L. Gram.—p. 158.
*Decrease of Complement Content of Blood in Allergic Diseases. B. Paul and M. Pély.—p. 163.

Hyperchromic Anemias in Experimentally Produced Spruelike Disturbances.—In their studies on alimentary anemia, Rominger and Bomskov were able to produce two types, a chlorotic type that developed in growing white rats after feeding with cow's milk, and one that resembled pernicious anemia and developed after feeding with goat's milk. It was found also that the cow's milk anemia is due to lack of iron and copper, for the administration of these two metals cured or prevented it. The goat's milk anemia reacted just like pernicious anemia to liver and liver extracts. The main symptoms of the disorder that developed in the growing rats following feeding with goat's milk were fatty stools, pernicious anemia, lipemia and nervous disturbances; that is, the symptoms of sprue. It was found that the disorder can be prevented and cured by the administration of the vitamin B_2 complex, of liver and of liver extracts. The authors discuss the development of the spruelike disorder and of the anemia on the basis of the various theories that have been advanced. Their own studies convinced them that, although the lack of a specific food factor in the sense of Castle's principle is a contributing factor in the development of spruelike disturbances, it is not the only factor, and that the gastro-intestinal disturbances, which prevent the resorption of this factor, likewise play a part. They think that this opinion can be reconciled with some of the contradicting theories of the etiology, pathogenesis and treatment of the spruelike diseases and that it explains the therapeutic action of liver preparations in sprue. At any rate, the unsolved questions should be investigated further on the basis of the described experimental methods in animals with goat's milk anemia.

Specific and Nonspecific Reactions in Typhus, Cancer and Tuberculosis.—Hirszfeld and his associates summarize their observations as follows: 1. Typhus, cancer and tuberculosis serums react in a certain percentage of cases with organic lipoids, with cholesterol and with cancer extracts. If the percentage of the positive reactions of tuberculosis and cancer serums are compared with tuberculosis and cancer antigens, a greater reaction capacity with the homologous antigen becomes evident, a fact which, although it does not definitely demonstrate a specific affinity, makes it nevertheless probable. 2. The different lability reactions occur in various percentages, but certain elective affinities seem to exist; for instance, the tuberculosis serums react more frequently with lecithin, the cancer serums with cholesterol. It is of practical significance that all reactions with lipoids occur less often than the lability reactions according to Daranyi. The nonspecific Daranyi reaction provides a better basis for the exclusion of tuberculous infection or of cancer than does the reaction with specific antigens. 3. The various reactions do not have strong correlations. However, there exists a certain correlation in tuberculosis between the tuberculosis reaction of Witebsky and the lecithin reaction of Sachs, as well as between Hirszfeld's cancer reaction and the complement fixation with stabilized cholesterol. 4. The Wassermann reaction may become positive in the course of cancer, when a syphilitic infection is absent. This could be considered indirect proof of the auto-antibody theory of the Wassermann reaction. 5. The Wassermann reaction in typhus differs to a certain extent from the Wassermann reaction in syphilis, since it is positive only with some antigens and under the influence of heat and since the flocculation reactions develop not at all or only rarely.

Decrease of Complement Content of Blood in Allergic Diseases.—According to Paul and Pély, the immunobiologic processes are dependent on the presence of the complement. On the basis of recent investigations, the complement is considered no longer as a definite substance but rather as the expression of a colloidal condition. Thus complement signifies a physicochemical state of the blood by virtue of which it has complemental capacities. The authors show that in case of a parenchymal lesion of the liver the complemental capacity of the blood decreases, and, since parenchymal impairments of the liver always exist in allergic diseases, it was logical to assume that the complement content of the blood is reduced in allergic diseases. They made this problem the subject of their investigations. They give a tabular report of the complement content of the blood detected in various allergic disorders. They consider 0.04 cc. as the normal average; that is, this quantity of blood serum is required to effect hemolysis of 0.5 cc. of a 5 per cent suspension of sheep corpuscles in the presence of 0.5 cc. of a titrated hemolysin. The table shows that in allergic disorders the quantity of blood required for this purpose is much larger. The authors conclude from this that the physicochemical structure of the blood undergoes changes in allergic diseases and that these changes result in a decrease of the complemental capacity of the blood. They attempt an explanation of the decrease in the complement in allergic diseases.

14: 185-216 (Feb. 9) 1935. Partial Index

Sensitivity of Brain for Roentgen and Radium Rays. W. Scholz.—p. 189.

*Porphyrin Elimination During Normal and Pathologic Pregnancy. C. Carrié and L. Herold.—p. 196.

Method of Animal Experimentation for Demonstration of Castle's Principle of Gastric Juice and Its Clinical Significance. K. Singer.—p. 200.

*Therapy of Lambliasis. G. E. Sincke.—p. 204.

Porphyrin Elimination During Normal and Pathologic Pregnancy.—In studying the relationship of porphyrins to the blood pigment metabolism during pregnancy, Carrié and Herold employed the spectrocolorimetric determination of the urine. They found that porphyrin elimination is reduced during normal pregnancy. They think that this is due to the fact that a large portion of the maternal porphyrin is utilized in the formation of the fetal blood pigment, for during the puerperium they noted a renewed increase in the porphyrin elimination. In patients with hyperemesis of pregnancy they observed an increase in the porphyrin elimination, and on the basis of parallel tests on the function of the liver they conclude that this increased elimination is the result of a functional impairment of the liver. They think that by the detection of a greater elimination of porphyrin by means of their spectrocolorimetric method, in patients with hyperemesis or with eclampsia, they have demonstrated a disturbance in the hepatic function and thereby have provided a new possibility for the recognition of an insufficiency of the liver.

Therapy of Lambliasis.—Sincke observed that intravenous neoarsphenamine injections as well as most of the other remedies that have been recommended for the treatment of lambliasis do not produce permanent cures. Consequently he decided to resort to Lauda's method (THE JOURNAL, Dec. 1, 1934, p. 1743), which likewise employs neoarsphenamine but administers it not by intravenous injection but by the duodenal tube (0.3 Gm. of neoarsphenamine in 200 cc. of water). He was able to produce permanent results with this procedure and recommends Lauda's intraduodenal administration of neoarsphenamine for the treatment of lambliasis.

Monatsschrift für Kinderheilkunde, Berlin

61: 161-240 (Jan. 9) 1935. Partial Index

*Exophthalmic Goiter in Children. K. Wallis.—p. 161.

Life-Saving Action of Intravenous Injections in Nurslings. Rose Fleischmann.—p. 172.

*Problem of Lactation During Mastitis of Mother. M. Schlegel.—p. 191.

Intraperitoneal Infusion of Native Carlsbad Mineral Water for Beginning Treatment of Toxicosis in Nurslings. R. Ungar.—p. 194.

Exophthalmic Goiter in Children.—Wallis stresses the rarity of exophthalmic goiter in children in the region of Vienna. He points out that this contradicts the American reports, according to which hyperthyroidism occurs rather frequently in children. He thinks that this might be explained by local differences, pointing out that in regions in which goiter is endemic hyperthyroidism is rarer and more benign. On the other hand, he thinks that the term hyperthyroidism might be used by American authors in a more inclusive sense than it is in Vienna.

Lactation During Mastitis of Mother.—Schlegel points out that the majority of pediatricians are of the opinion that the nursling should continue to nurse at the breast in the course of a maternal mastitis, because the physiologic emptying of the breast has a favorable effect on the process of inflammation and a deleterious influence on the child does not have to be feared, since an enteral infection of the nursling, as the result of the intake of staphylococci with the breast milk, is not likely. However, the author observed a number of cases which prove that the enteral infection is not the only determining factor, for in the contact between mother and nursling other ways of infection are possible. He gives the histories of three cases in which the nurslings developed suppurating infections. One of the nurslings died. It cannot be doubted that the nurslings were infected during nursing, for the foci of suppuration appeared first on the face and the oral mucous membrane and the same pathogenic agents were found in mother and child. Since every suppurating infection threatens the life of a nursling, the author advises caution, particularly in the cases in which the breast of the mother has a tendency to abscess formation. He thinks that contact between mother and child should be avoided in these cases and that the child should be fed with the milk that has been drawn from the breast.

Wiener klinische Wochenschrift, Vienna

48: 129-160 (Feb. 1) 1935. Partial Index

So-Called Stockholm Method and Results of Treatment of Uterine Carcinoma at Radiumhemmet. J. Heyman.—p. 129.

*Clinical Aspects and Therapy of Sepsis Following Tonsillitis. R. Waldapfel.—p. 136.

Arthritis Deformans of Costovertebral Joints. P. Barcelo.—p. 139.

*Therapy of Anemia and Problems of Anemia. A. Hittmair.—p. 140.

Sepsis Following Tonsillitis.—Waldapfel differentiates two types of tonsillogenic sepsis. In the first type dissemination takes place directly by way of the blood stream from small thrombosed tonsillar veins and advances in the direction of the jugular vein. In the second type dissemination takes place by way of the lymph channels and along the neck, and from there by way of a periphlebitis, usually originating in a lymph node, with subsequent invasion of the blood stream and with secondary thrombosis of the jugular vein. Another important factor is that the port of entry is not always identical with the septic focus. The infection may originate in the tonsil, but the septic focus is frequently in the loose tissue of the parapharyngeal space. The therapy should take account of these pathologic anatomic conditions. The author has made it a rule to open and drain the parapharyngeal space from the outside and to examine the jugular vein whenever there is the slightest suspicion of infection. If the local changes in the tonsil indicate that the septic focus is within the tonsil, it is removed. By this method the author has succeeded in reducing the mortality rate greatly. The clinical symptoms that indicate the infection of the parapharyngeal space are infiltration of the neck, sensitivity to pressure in the region of the jugular vein, attacks of chills and symptoms of general sepsis. If these symptoms are apparent, the diagnosis and the decision to resort to an operation ought to present no difficulties. On the other hand, when the local changes seem insignificant it may be difficult to diagnose the condition. The author calls attention to the jugular glands as septic foci and stresses that they ought to be removed even if there is only an inflammatory swelling.

Therapy and Problems of Anemia.—Hittmair points out that the mechanism by which stomach and liver influence the blood formation is at present the most burning question in the problem of anemia. That even in so-called primary anemia the blood changes are only a symptom and not the disease itself is proved by the fact that although the modern treatment of anemia produces excellent symptomatic results it does not effect complete cure. The author mentions a number of symptoms that occur in all "primary" anemias but limits his discussion

to pernicious anemia. He calls attention to the fact that the liver and stomach therapy of pernicious anemia proved that it was an error to consider this anemia a hemolytic one. Incretory factors play a much greater part than does the hemolysis. It is known that the products of the adrenals and of the thyroid increase the action of the liver and that in some cases of hypothyroidism thyroid extract has to be administered before the liver therapy can become effective. Moreover, atrophy of the thyroid occasionally accompanies pernicious anemia, and strumectomy for the treatment of exophthalmic goiter has been known to be followed by pernicious anemia. On the other hand, chlorosis and achylic anemia frequently concur with hyperthyroidism. In achylic anemia this is surprising, since hypochlorhydria is usually accompanied by a hypofunction of the thyroid. The efficacy of iron likewise can be increased by a combination with incretory preparations, yet it cannot be said that either reduced iron or liver or stomach extracts exert their influence by way of the hormone system. The author thinks that the spinal symptoms and the glossitis indicate that a toxin plays a part in pernicious anemia. Other toxic symptoms of this disease, such as fever, disturbances in the water exchange and subjective disturbances, usually disappear following stomach or liver therapy. This is probably due to a detoxicating effect. The author discusses the influence of stomach and liver on the blood formation, calling especial attention to certain embryonal conditions.

Zeitschrift f. Geburtshülfe u. Gynäkologie, Stuttgart

110: 105-224 (Jan. 29) 1935

*Endocrine Syndrome During Pregnancy and Following Puerperium. E. Kehrer.—p. 105.
Respiration and Circulation in Pregnant Women with Pulmonary and Thoracic Disturbances. R. Hansen.—p. 121.
*Lactic Acid Content of Blood During Pregnancy and Puerperium. J. Truka.—p. 137.
Uterine Scars at End of Pregnancy. R. Fikentscher.—p. 142.
Experiences in Delivering Old Primiparas. O. Wallis.—p. 149.
Tuberculosis of Uterine Cervix. L. Morillo.—p. 166.

Endocrine Syndrome During Pregnancy and After Puerperium.—Kehrer shows that during pregnancy there usually develops a more or less pronounced hypertrophy and hyperplasia of most of the endocrine glands. This is pronounced in the hypophysis, in which the characteristic pregnancy cells appear. The signs of incompletely developed acromegaly observed in some pregnant women are probably not the result of the pregnancy cell but rather caused by the simultaneous hypertrophy of the eosinophile cells. The excessive increase in the size of the hypophysis may result in mechanical pressure on the neighboring portions of the brain, on the diencephalon with subsequent development of diabetes insipidus (polyuria, polydipsia), or on the optic chiasm with amblyopia or amaurosis. Occasionally obesity develops by way of the cerebral cortex-diencephalon-glandular hypophysis. After the puerperium there often appear the symptoms of diencephalic-hypophyseal adiposity, the so-called adiposogenital dystrophy, the symptoms of hypophyseal cachexia (Simmond's disease) and the symptoms of progressive lipodystrophy. These disorders are caused by organic changes in the diencephalon or the glandular hypophysis (severe forms), or they are of psychic origin, developing by way of the cerebral cortex-diencephalon-glandular hypophysis (mild and atypical forms). Both types are accompanied by ovarian disturbances, usually amenorrhea. Later, disturbances of the thyroid may develop, which become manifest as hypothyroid adiposity or as thyrosexual insufficiency. These two syndromes are generally accompanied by hypogenitalism and amenorrhea. Then again thyrotoxicoses may develop, particularly in the form of exophthalmic goiter. Pancreatic diabetes in the severe as well as in the mild form develops primarily in women who have borne several children. Its first beginnings can usually be traced to a postpuerperal period. Addison's disease has likewise been known to develop following the puerperal period. In addition to the typical there occurs an atypical form, which is designated as adrenal emaciation. The so-called multiple endocrine sclerosis, a severe impairment of several endocrine glands with reduction or complete abolition of their function, has been observed frequently following a febrile puerperal process. It is always caused by fibrous atrophy of the glandular hypophysis, which is usually followed by the development of similar changes in other incretory glands: the thyroid, the ovaries and the adrenals.

Lactic Acid Content of Blood During Pregnancy and Puerperium.—Truka points out that many investigators who study the lactic acid content of the blood during pregnancy make the mistake of comparing the values with so-called normal values. He maintains that there is really no normal value, because it changes with the time of the year, with the nutrition and with the physical and psychic condition of a person. Thus it is possible to determine a change in the lactic acid content of the blood only if these factors are the same. The author's tests were made with due regard to these factors. He found that during the ninth month of pregnancy the lactic acid content of the blood increases by 40 or 50 per cent. He controlled the values also on the first days of the puerperium and found that several days are required before the normal level is reached again. He concludes from this that the increase cannot be due to a greater muscular activity.

Zeitschrift für klinische Medizin, Berlin

127: 609-731 (Jan. 18) 1935

Clinical Contribution to Function of Liver in Various Disorders. C. A. A. Schrumpf.—p. 609.
Studies on Disturbances in Conduction System of Cardiac Excitation by Means of Direct Leads for Auricular Electrocardiogram. S. Laufer.—p. 678.
Hyperglycemia by Reflex Action from Oral Mucous Membrane. R. Pannhorst.—p. 688.
*Etiology of Cryptogenetic Paroxysmal Hemoglobinuria. A. O. Schally. —p. 697.
*Hypophyseal-Suprarenal Insufficiency and the Schellong-Strisower Phenomenon. J. Ratner.—p. 713.

Etiology of Cryptogenetic Paroxysmal Hemoglobinuria.—Schally describes a case of hemolytic anemia with paroxysmal hemoglobinuria, which he considers as an unusual manifestation of chronic sepsis. He thinks that the case belongs to the Marchiafava-Micheli type of hemolytic anemia with hemoglobinuria. The chronic sepsis becomes manifest through continuous febrile temperatures that often assume a septic character, occasional chills, and splenic tumor with leukopenia and thrombopenia. One of the first attacks is followed by septicopyemia. Each one of the numerous attacks is accompanied by the acute appearance of various infectious foci located primarily in the accessory nasal sinuses. The author assumes that the prolonged infection caused a toxic impairment of the organs of erythropoiesis. The acute outbursts of infection cause hemolysis of the erythrocytes, the resistance of which has been reduced. He suggests that other obscure cases of paroxysmal hemoglobinuria may perhaps be explained in the same manner.

Hypophyseal-Adrenal Insufficiency and the Schellong-Strisower Phenomenon.—Observations on the paradoxical reduction of the systolic pressure during the transition from the horizontal to the erect posture in asthenic persons and reports by Schellong and Strisower induced Ratner to investigate the problem of the extracardiac disturbance of the circulatory regulation. Schellong traced this disturbance of the circulatory regulation to an insufficiency of the anterior lobe of the hypophysis. Strisower, who observed the disturbance in tabes dorsalis, ascribed the insufficient blood pressure regulation to a disturbance in the nervous conduction and rejected an endocrine cause. Without denying entirely the possibility of nervous involvement, Schellong remarks that Strisower's patients, who had attacks of vertigo and fainting, became greatly emaciated. Ratner describes ten cases and discusses the nature of the Schellong-Strisower phenomenon in hypophyseal and interrenal insufficiency. His observations indicate that the lack of the interrenotropic hormone of the hypophysis is the most important factor in this regulatory disturbance. However, he stresses at the same time the part played by the sympathetic centers. He emphasizes the necessity of watching for this symptom in spontaneous hypoglycemia. In describing a case of hypophyseal insufficiency with disturbances in the pigmentation, he calls attention to suggestions Morawitz made in regard to pigment vitamins and to the fact that tetany cataract frequently concurs with disturbances in pigmentation.

Zentralblatt für Gynäkologie, Leipzig

59: 241-304 (Feb. 2) 1935

Early Mortality in the New-Born. P. W. Siegel.—p. 242.
*Giant Infants in Maternal Diabetes. L. Fischer.—p. 249.
Mechanism of Delivery in Teratism. H. Kraatz.—p. 260.
Apparent Heterosexual Juxtaposition of External Sex Characters in Woman, Aged 23. V. Rapant.—p. 270.
*Congenital Diaphragmatic Hernias in the New-Born. V. Lissowetzky. —p. 276.
*Diagnosis of Fetal Deformities Before Delivery: Necessity of Precaution in Interpretation of Roentgenograms. J. Koerner.—p. 284.
Differentiated Cerebral Cortex in a Dermoid Cyst. O. Hajek.—p. 286.

Giant Infants in Maternal Diabetes.—Fischer demonstrates with reports in the world literature that the infants of diabetic mothers frequently are of excessive weight. On the basis of a general analysis of the carbohydrate metabolism and of the changed metabolic conditions during pregnancy, the relations between mother and fetus, as regards the carbohydrate metabolism, are discussed. It is assumed that the increased maternal blood sugar content causes an oversupply of dextrose in the fetal circulation. The placenta supposedly plays no active part in this process. Since the fetus has an adequately functioning pancreatic island apparatus relatively early during its existence, it is capable of storing the oversupply of sugar in the form of glycogen. Moreover, the fetus develops beyond its normal size. The aid given to the maternal organism by the presence of a functioning fetal pancreas cannot be explained by a passage of insulin from the fetus to the mother but is rather the result of the continuous drawing off of considerable amounts of blood sugar.

Congenital Diaphragmatic Hernias in the New-Born.—Lissowetzky maintains that roentgen diagnosis and systematic necropsies on the cadavers of the new-born indicate that congenital diaphragmatic hernias are not as rare as is generally assumed. In the course of 220 necropsies on infants, three cases of congenital diaphragmatic hernias were found, and the developmental anomaly had been the cause of death in all three cases. The author studied the developmental anomaly in a number of cases. He adheres to the newer theory that considers the diaphragmatic defect not the result of an inhibition in the development during the embryonal period but rather the result of a dissociation of the embryonal aggregations of cells that later form the diaphragm. This dissociation may be caused by a shifting of the abdominal organs or by an overfilling of the abdominal cavity by the intestine, as the result of which the organs are forced from the abdominal to the thoracic cavity. The change in the position of the organs may result from exogenic factors, such as constriction of the maternal abdomen or a push or thrust against it, or from endogenic disturbances in the embryonal conditions. The newer idea of the development of the diaphragmatic defect is of practical significance, for the opinion that the defect is not due to the absence of a portion of the diaphragm but to rending of the embryonic traces of the diaphragm makes the development of an incarceration appear likely, and it also suggests the possibility of surgical repair. In postmortem studies the author observed that after the displaced organs had been brought from the thoracic into the abdominal cavity the edges of the defect came closer together, so that practically only a slit remained. He believes that early diagnosis and resorting to the proper measures will make it possible to save the life of infants with congenital diaphragmatic hernia in the majority of cases.

Diagnosis of Fetal Deformities Before Delivery.—Koerner points out that most obstetricians are of the opinion that pregnancy should not be carried to term when examination during the last months of pregnancy reveals a deformity that makes it impossible for the child to live. He admits that the use of roentgenoscopy makes it much easier to recognize such deformities, but he stresses that this advancement in the technic should not be a temptation to make a grave decision without careful deliberation. He describes a case in which roentgenoscopy disclosed an abnormal position, an unusually large head and a double rectangular bending of the vertebral column. The possibility of a deformity of the fetus was considered, but it was nevertheless decided to terminate the delivery by a cesarean operation. The child was normal, roentgenoscopy of its vertebral columns revealed no abnormalities, and the further development was normal. It is interesting to note that the brother of the mother is a contortionist.

Hospitalstidende, Copenhagen

78: 57-84 (Jan. 15) 1935

*Studies on Atrophy of Liver: C'td. T. Geill and J. V. Jørgensen. p. 57.
Proctalgia Fugax: Little Known Form of Pain in Rectum. T. E. H. Thaysen.—p. 73.
*Mycosis Fungoides Treated with Chaulmoogra Oil. S. Lomholt.—p. 79.

78: 85-112 (Jan. 22) 1935

*Unspecific Chronic Epididymitis. P. W. Bræstrup.—p. 85.
*Studies on Atrophy of Liver: C'cn. T. Geill and J. V. Jørgensen. p. 97.
Action of Alpha-Hypophamine on Delivery of Placenta. O. Scheibel. —p. 106.

Atrophy of Liver.—Geill and Jørgensen discuss the clinical and anatomopathologic picture of acute, subacute and chronic liver atrophy, illustrating this with ten cases. Acute parenchymatous degeneration of the liver may cause death in the acute stage, heal completely or take a protracted or recurrent course. The degenerative processes go hand in hand with regeneration and proliferation of the connective tissue and in atrophy the liver may be transformed in different ways. Because of the varying clinical picture, considerable difficulties in differential diagnosis may arise. In protracted cases, ascites and disturbance in the portal circulation may develop, causing the clinical picture to resemble that of liver cirrhoses. The intermittent course in protracted cases not infrequently results in intermittent jaundice and severe colic-like pains in the hepatic region, so that confusion with cholelithiasis may occur. A third clinical form of liver atrophy appears in certain subacute and chronic cases in the guise of a progressive cachexia, simulating cancer in the liver or bile ducts; this condition is due to deficient liver function with autointoxication. The galactose test sometimes fails in the acute forms of liver atrophy; in the more protracted cases the outcome is usually negative, probably because the pseudotubuli formed in the regenerative phases can assimilate the galactose. Although the prognosis in liver atrophy must as a rule be considered grave at the start, the possibility is not excluded that energetic medical treatment with sugar and insulin may in some cases delay the development of the process and possibly even check it. As operative intervention, even exploratory laparotomy, is not well borne by patients with liver atrophy, the attempt should be made by means of other tests of the function of the liver or biliary tract to reach a more certain diagnosis. While the causes of the development of liver atrophy are uncertain, the authors are inclined to think that it may be due to a number of highly different intoxications and infections.

Chaulmoogra Oil Treatment of Mycosis Fungoides.—Lomholt asserts that, in the stage of mycosis fungoides in which the infiltrating erythema is about to be followed by tumor formation, chaulmoogra oil exerts a remarkable influence. In the four cases reported the treatment has, at least temporarily, led to complete or almost complete freedom from the symptoms. In addition to its action on mycosis fungoides, chaulmoogra oil seems to affect other forms of granulation tissue in the skin, such as certain forms of tuberculosis, Boeck's sarcoid and granuloma annulare.

Unspecific Chronic Epididymitis.—Bræstrup says that in the majority of cases this disturbance is due to transplantation by the canalicular route of an inflammation from the urethra. The symptoms in chronic and subacute epididymitis resemble those of tuberculous epididymitis, and clinical distinction may be impossible. Treatment consists of rest in bed and elevation of the scrotum for from eight to ten days. In the mild cases, in which the symptoms tend to recede rapidly, conservative treatment is continued; in the other cases, resection of the epididymis with the vas deferens is then done. Urethritis was confirmed in six of the eighteen cases reported, and in three there was pyuria. Five had a history of trauma. Fourteen were treated surgically; hemicastration was necessary in only one. The diagnosis was verified microscopically.